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ABSTRACT

This document reports a comprehensive followup study to describe postservice life status of former vocational rehabilitation clients and to develop an empirical index of postservice adjustment to spinal cord injury. Significant findings, conclusions, and implications are found at the beginning. The introduction section summarizes followup studies in general and those studies specific to the spinal-cord injured. The methodology section overviews the research population (297 former Arkansas Rehabilitation Service spinal-cord-injured clients three to four years postentry into an Innovative and Expansion service delivery project) and initial and followup questionnaires. Results are presented in two subsections. The first, Life Status at Followup, contains categorical information describing what happens to spinal-cord-injured persons after rehabilitation services, including satisfaction with services, vocational economic characteristics, and changes in life status. The second subsection, Indexing Adjustment to Spinal Cord Injury, is a technical supplement describing an empirical measure of adjustment from the perspective of the disabled with these eight subscales: (1) avocational-intellectual, (2) avocational-leisure, (3) basic adult daily living (ADL), (4) independent ADL, (5) shopping-cleaning ADL, (6) vocational activity, (7) general physical health, (8) general mental health. The survey form, adjustment scales and scoring procedures, and a summary of statistically significant adjustment scale score differences are appended. (YLB)

ADJUSTMENT TO SPINAL CORD INJURY:

A COMPREHENSIVE FOLLOW-UP STUDY

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with the assistance of

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Arkansas Rehabilitation Services

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Preface

In many respects spinal cord injury is prototypical of "the most severely disabled." Consequently, there has been a relatively recent explosion of studies concerning the rehabilitation of spinal cord injured persons. However, in an exhaustive review of over 600 studies, we were able to locate only 20 studies concerning the post-service adjustment of the spinal cord injured. Therefore, the purpose of this research was to describe through a comprehensive follow-up study the postservice life status of former vocational rehabilitation clients and to develop an empirical index of postservice adjustment to spinal cord injury.

The report is divided into several sections. Significant findings, conclusions and implications are found at the beginning of the report. The introduction section provides a detailed summary of follow-up studies in general and those studies specific to the spinal cord injured. Program evaluators and rehabilitation researchers will find the methodology section of interest. Results are presented in two subsections. The first section, "Life Status at Follow-up" contains categorical information describing what happens to spinal cord injured persons after rehabilitation services. The second section, "Indexing Adjustment to Spinal Cord Injury" is in reality

a technical supplement describing an empirical measure of adjustment from the perspective of disabled themselves. Because the index was developed to serve as a criterion for further research, it is very sample specific. We do believe, however, that the procedures used to develop the index have considerable promise for treatment related applications.

We acknowledge and thank the following people for their contributions to this research. Mr. Paul Taperek served as the telephone interviewer and data coordinator, Mrs. Winnie Shaffer provided considerable assistance with data processing, Mrs. Lorry Hogue typed the report and assisted in data coordination, and Ms. Mary Drevdahl reviewed the manuscript. We are especially thankful for the effort extended by Mrs. Clara Harlan, Arkansas State Spinal Cord Commission and by the staff of Arkansas Rehabilitation Services in attempting to locate these spinal cord injured persons.

November 20, 1980

Daniel Cook

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Significant Findings, Conclusions, and Implications

1. Sample Characteristics

Finding: The follow-up sample consisted of 144 spinal cord injured (SCI) clients referred for vocational rehabilitation services in Arkansas between 1975 and 1978, with these characteristics: 73% males, 68% paraplegics, median age of 30 years, 45% married 47% high school graduates, and 55% self-supporting prior to injury.

Conclusion: Demographic characteristics of these SCI clients compared favorably to demographic characteristics of SCI persons nationally (Trieschmann, 1978). These SCI were heterogeneous with respect to severity of injury, education, marital status, and employment experience.

Implication: The results of this study may be generalizable to other SCI outside Arkansas. SCI clients are likely to require intensive, individualized rehabilitation services to meet their unique vocational and personal circumstances.

2. Economic Status

Finding: At follow-up in the spring of 1980, 53% of the SCI clients were receiving primary financial support,

and another 30% were receiving some support from SSDI. Only 16% were receiving most of their income from wages or salaries. Financial assistance was the most frequently cited future need.

Conclusion: The majority of SCI clients require financial assistance with their basic costs of living. Indeed, some quadriplegics have estimated (Crewe, Athelstan, & Bower, 1978) that they would need a minimum salary of $18,000 to $20,000 merely to meet everyday expenses. Apparently only a minority of SCI-VR clients can be expected to become financially independent.

Implication: Rehabilitation counseling with SCI clients should be premised on a clear understanding of the financial realities of the condition. SCI clients will most likely require some form of continuing financial assistance, although this fact should not lessen the counselor's concern with vocational and educational preparation.

3. Vocational Rehabilitation Outcomes

Finding: Nearly one-half of the vocational rehabilitation case closures were successful rehabilitations. Only 17% of the cases were closed as ineligible for services. At follow-up, 14 (42%) of the successful

rehabilitants were competitively employed. An additional 15 SCI were also employed. At follow-up and including still open VR cases, only one-half of the sample were engaged in some gainful activity, i.e., employment, homemaker, unpaid family worker, or schooling.

Conclusion: The 23% employment rate and 50% rehabilitation rate reflect favorably on the effectiveness of services with this difficult to rehabilitate population. In contrast to national statistics on all disabilities referred for VR services, wherein approximately 50% are declared ineligible for services, 93% of these SCI received at least some services.

Implication: Intensive services to the SCI can result in a relatively high rehabilitation rate. Counselors need to be aware that about one-half of the SCI served are not likely to engage in gainful vocational activities. These persons may be good candidates for independent living services.

4. Satisfaction with Services

Finding: These SCI were generally pleased with rehabilitation services. They rated the following services as most helpful.

Physical therapy (83%)

Medical services (81%)

School or vocational training (64%)

Purchase of tools or equipment (60%)

Personal counseling (34%)

Living expenses (20%)

Job placement (4%)

Conclusion: SCI clients are generally satisfied with medical and vocational preparation services, and not very satisfied with personal counseling and job placement services.

Implication: The low satisfaction with traditional rehabilitation counseling services indicated by SCI clients suggests that counseling and job placement efforts must be strengthened if they are to be perceived as helpful by SCI clients.

5. Satisfaction with Employment

Finding: Most (71%) of the competitively employed SCI clients were very satisfied with their jobs, none were dissatisfied.

Conclusion: Work is an important, meaningful activity for SCI clients, apparently regardless of suitability of the position.

Implication: Wherever feasible rehabilitation counselors should place emphasis on preparation and placement of SCI clients.

6. Barriers to Employment

Finding: Of the 118 SCI clients not currently working, only 20% were looking for a job. Almost one-half (47%) of those not working felt they would have very little chance of getting a preferred job if it were available. The largest perceived barrier to employment by unemployed SCI clients was the impairment and its associated medical problems (72%).

Conclusion: SCI clients who were unable to find employment were generally pessimistic about their employment prospects. They attributed their pessimistic attitude to their disabilities.

Implication: A substantial proportion of SCI clients perceive that they are unable to work. Counselors need considerable skill in developing realistic plans for SCI clients.

7. Perceived Physical and Mental Health

Finding: Most SCI clients judged their overall mental health to be either excellent (37%) or good (35%); one-half (49%) rated their physical health

(aside from disability) as excellent or good, with the others describing their physical health as fair or poor.

Conclusion: The majority of SCI clients perceived their emotional adjustment to be satisfactory, while one-half described their physical health as fair or poor.

Implication: SCI clients are more likely to present concern over their physical health than their emotional health. Most SCI clients are not likely to see the need for extensive psychological services.

8. Future Goals

Finding: One-half (54%) of SCI clients selected independence goals as their most important future goals, one-third (31%) chose psychological goals, while only 15% identified social goals as most important. Relative to other future needs, psychosocial needs such as resolving emotional conflicts were infrequently cited.

Conclusion: SCI clients' future adjustment and happiness most often involve personal accomplishments in the areas of independent functioning or social adjustment.

Implication: Future goals are highly personal and idiosyncratic. Counselors need to be aware of the heterogeneity of goal choice among the SCI and the fact that personal goals are not the same as stated needs.

9. Participation in Avocational Activities

Finding: The most popular recreational/educational activities engaged in by SCI clients were:

Watching T.V. and listening to radio (100%)

Reading books or magazines (86%)

Visiting with friends (85%)

Moderately popular activities were:

Outdoor activities (57%)

Attending religious services (48%)

Hobbies and crafts (44%)

Social gatherings (43%)

Conclusion: SCI persons engage in a wide range of avocational activities probably at about the same frequency as do able-bodied persons.

Implication: Counseling and teaching recreational activities to SCI clients can aid postservice adjustment.

10. Level of Functional Independence

Finding: About two-thirds of these SCI clients were essentially independent in performing basic ADL tasks, e.g., dressing, eating, bathing, and transferring from chair to bed, while only one-third were independent with respect to mobility skills.

Conclusion: Rehabilitation services appeared effective in teaching these SCI activities of daily living skills. Freedom of mobility is most likely related to environmental constraints and is more difficult to impact.

Implication: Lack of mobility can hamper rehabilitation efforts among the SCI. Continuing mobility training and removal of environmental barriers appears to be an area where rehabilitation services need to be upgraded.

11. Impact of SCI on Life Style

Finding: Changes in the life status of SCI clients from preinjury to follow-up were as follows:

Primary source of income (91%)

Primary avocational activity (72%)

Living arrangements (31%)

Marital status (13%)

Conclusion: The occurrence of SCI produces changes in the financial and avocational areas of the lives of most SCI clients, while changes in the personal living circumstances are much less frequent.

Implication: Rehabilitation counselors working with SCI clients should include discussions of financial issues and the constructive use of leisure time in their counseling sessions.

12. Moderators of Adjustment to SCI

Finding: Comparisons between males and females, paraplegics and quadriplegics, and younger and older SCI clients revealed several differences. One consistent finding across comparisons was that males, quadriplegics, and older clients were all less optimistic about their employment prospects. Other findings were that females appeared better adjusted (e.g., were more independent in activities of daily living, socially active and likely to engage in gainful activities); there were relatively few "adjustment" differences between paraplegics and quadriplegics; and older SCI were the least well adjusted.

Conclusion: Quadriplegics were as well adjusted as were paraplegics. Females, who make up a relatively

small proportion of the national spinal cord injured population, are the best bet for positive rehabilitation outcomes; and older males are perhaps the most difficult to rehabilitate.

Implication: Rehabilitation should not preclude comprehensive services because of the severity of the disability. Females may have different rehabilitation goals (e.g., return to a central family role), although counselors need to guard against possible sex bias. Older SCI present special rehabilitation problems and may require intensive lifetime services.

13. Indexing Adjustment to SCI

Finding: Using standard psychometric procedures it was possible to construct a continuous empirical index of adjustment to spinal cord injury. Index scores approximated a normal distribution.

Conclusion: It is possible to rank order spinal cord injured clients on a measure of adjustment.

Implication: An empirical measure of adjustment may serve as an objective criterion by which correlates of adjustment can be studied.

14. Adjustment Domains Measured

Finding: Analysis of scale scores revealed that the index measured four adjustment domains: ability to perform activities of daily living, time spent in avocational activities, participation in vocational activities, and perception toward physical and mental health.

Conclusion: Four domains reasonably defined adjustment to spinal cord injury.

Implication: Adjustment from the perspective of the individual is multidimensional and is not a unidimensional bipolar construct.

15. Characteristics of High and Low Adjusters

Finding: Persons with higher overall adjustment scale scores were more likely to be female, younger, choose jobs and removal of environmental barriers as their most pressing future needs, cite lack of training, or transportation as a reason for unemployment, and remain optimistic toward future employment. Persons with lower overall adjustment scale scores were more likely to be male, older, choose financial aid and medical care as their most pressing needs, receive most income from Social Security, cite disability as the reason for not

working, and remain pessimistic toward future employment.

Conclusion: Correlates of adjustment were in the expected direction and are supported by categorical findings reported in the literature on adjustment to spinal cord injury.

Implication: The adjustment to spinal cord injury index appears to have construct validity.

16. Severity of Injury and Adjustment

Finding: Level of impairment and type of personal goals were not related to overall adjustment scores.

Conclusion: The adjustment to spinal cord injury index is sensitive to heretofore undocumented findings.

Implication: Type of personal goal choice is idiosyncratic and appears unrelated to degree of overall "adjustment". In considering adjustment to be more than degree of functional limitations, quadriplegics are as well adjusted as paraplegics.

17. Vocational Rehabilitation Outcomes and Adjustment

Finding: Clients who had been closed as rehabilitated or who remained in active status had significantly higher overall adjustment scores compared to those

SCI who were closed as ineligible for rehabilitation services or as non-rehabilitants.

Conclusion: Type of vocational rehabilitation outcome correlated with adjustment scale scores, further supporting the construct validity of the scale.

Implication: The scale appears to be a useful criterion measure of postservice adjustment to spinal cord injury.

18. Predicting Postservice Adjustment

Finding: Three variables; age (younger), sex (female), and less than high school education have a multiple correlation of .56 with overall adjustment scores.

Conclusion: Thirty-one percent of postservice, scale defined adjustment to spinal cord injury variance was predictable from three variables.

Implication: Using similar scale development procedures, it may be possible to predict at service entry those SCI needing extensive services, and those SCI who need minimal services.

Introduction

Throughout history spinal cord injury has been considered catastrophic. Until recently most persons so injured simply did not survive the effects of injury. In fact, the first comprehensive spinal cord injury treatment facility at Stoke-Mandeville Hospital in Great Britain was not established until 1944. In the United States the Veterans Administration, faced with the large number of spinal cord injured veterans of World War II, developed the concept of regional, comprehensive rehabilitation centers for the spinal cord injured. With passage of the Rehabilitation Act of 1973, funds were provided to establish comprehensive regional centers to serve the civilian spinal cord injured. That population has been established at about 125,000 nationwide with an estimated impairment related cost of $2.4 billion (Turem, 1975).

In treating spinal cord injuries, acute medical care, stabilization, and maintenance remain of first concern. In fact, of 3,059 research studies conducted between 1940 and 1963, all but 70 were concerned with medical problems associated with the impairment. With increased medical knowledge and injury site evacuation procedures, more persons have survived the acute effects of injury and reentered society. Concern with the vocational/psychosocial

adjustment of the spinal cord injured has resulted in over 600 relatively recent studies (Athelstan, Scarlett, Thury, & Zupan, 1978), and even more recent book chapters and books (Crewe, Athelstan, & Bower, 1978; Cull & Hardy, 1977; Trieschmann, 1978), specifically addressing such rehabilitation concerns as psychological adjustment, sexuality, and client motivation. Conspicuous by their absence are the lack of follow-up studies describing the postrehabilitation adjustment of the spinal cord injured. Follow-up studies of those spinal cord injured who received vocational rehabilitation services are even more rare.

Follow-up Studies in Vocational Rehabilitation

Follow-up studies of former clients have long been popular in vocational rehabilitation. The Rehabilitation Act of 1973, in specifying two program evaluation "standards", mandated that agencies take steps to insure rehabilitated clients retain the benefits of services and that any client's postemployment service needs be satisfied. This added impetus for developing improved follow-up methodology suitable for former rehabilitation clients (for a discussion of rehabilitation related follow-up methodology see Cook, 1977; Chope & Reagles, 1974; McCaul & Cooper, 1979; Reagles, 1979). Bolton (1981) has provided the most recent and comprehensive review of follow-up studies

in rehabilitation. In reviewing over 100 vocational rehabilitation follow-up studies, Bolton (1981) concluded:

1) Different studies defined employment (the system-wide criterion of most interest) in different ways.
2) Most studies investigated mixed disability groups; few studies analyzed a single disability group such as the spinal cord injured.
3) "Good adjustment" invariably referred to self-support or at least employment at follow-up.
4) Severity of disability was related to employment at follow-up.
5) About 66% of the clients sustained the benefits of rehabilitation two to four years postservice.
6) Follow-up return rates seldom exceed 50%.
7) At follow-up approximately one-third of the former clients indicated a need for additional rehabilitation services.

Finally, Bolton (1981) presented evidence suggesting that postservice psychosocial adjustment may be relatively independent of employment status. He made a case for including psychosocial adjustment as an important follow-up variable.

Follow-up Studies of Spinal Cord Injured Persons

Follow-up studies are invaluable in documenting the benefits (or lack thereof) of rehabilitation services.

Follow-up studies of persons who have suffered such a debilitating impairment as spinal cord injury are also important in understanding how persons adapt to a radically altered physique. Because a spinal cord injury transforms a person from a state of relative independence : an initial state of complete dependence, influences multiple physiological systems, and is a visible stimulus both to the person and to others, study of cord injured persons can enhance knowledge of the psychosocial aspects of severe physical disability. Considering that adaptation to disability must be related to the larger socio-cultural environment, and not just the self-contained environment of the hospital, it is surprising to note the relative lack of follow-up studies on persons with spinal cord injury regarding postservice psychosocial adjustment. In fact, we were able to locate only 20 follow-up studies (about 3% of the published SCI psychosocial studies) conducted and published from 1954 to 1979. Table 1 summarizes these follow-up studies.

Follow-up methodology. Most of the 20 spinal cord injured follow-up studies failed to provide minimal information necessary to evaluate their methodological adequacy. In fact, the majority of studies failed to fully describe the population from which the follow-up samples were drawn. For example, Felton and Litman (1965)

Table 1

Follow-up Studies on the Spinal Cord Injured 1954-1979

Study	Sample n	Response Rate	Outcome Measure	Time Post Service	Paraplegics	Male	Service Setting	Type
Crewe, et al. (1979)	128	85%	Marital status	1-11 years	50%	85%	Medical Rehab. Ctr	Interview
Athelstan & Crewe (1979)	128	85%	General Adjustment	1-11 years	50%	85%	Medical Rehab Ctr	Interview
Sakalas, Harasymiu & Miller (1978)	66	60%	Correlates of unemployment	not given	61%	66%	Medical Rehab Ctr	Telephone
Ghatit & Hanson (1978; 1979)	745	60%	Employment (38% full, 12% part-time) marital status	not given	67%	100%	VA	Mail Questionnaire
Frielich (1979)	145	73%	Adjustment Index	outpatients	70%	100%	VA	Interview
Felice, Muthard & Hamilton (1976)	27	60%	Employment (15%) Needs assessment	1-3 years	40%	81%	Voc Rehab	Interview
Seybold (1976)	1,664	35%	Employment (13%)	not given	54%	100%	VA	Mail Questionnaire
Deyoe (1972)	219	not given	Employment (28%) General Adjustment	1-25 years	70%	100%	VA	Interview
Wilcox & Stauffer (1972)	270	78%	General Adjustment	1-4 years	36%	not given	Rehab Ctr	Phone/ Interview

Table 1(Cont.)

Follow-up Studies on the Spinal Cord Injured 1954-1979

Study	Sample n	Response Rate	Outcome Measure	Time Post Service	Paraplegics	Male	Service Setting	Type
Kemp & Vash (1971)	50	100%	Productivity Index	not given	50%	72%	Hospital	Interview
Steinberg, Birenbaum, & Stoddard (1968)	25	not given	Home Management	1-16 years	8%	72%	Hospital	Interview/ Mail Questionnaire
Geisler, et al. (1966)	1,204	not given	Employement (46%)	not given	72%	not given	Medical Rehab Ctr	unknown
Runge (1966)	48	70%	Self Care	6 mos to 10 years	0%	75%	Rehab Hospital	Mail Questionnaire
Fowlks (1966)	106	73%	General Adjustment	not given	81%	not given	VA	Mail Questionnaire
Dvanch, et al. (1965)	55	not given	Vocational Adjustment	1-17 years	69%	60%	Medical Rehab Ctr	Interview
Felton & Litman (1965)	222	not given	Employment (58%)	not given	72%	100%	not given	Mail Questionnaire
Deutsch & Goldston (1960)	40	100$	Family Adjustment	1-3 years	not given	not given	Hospital	Interview
Berns, et al. (1957)	31	not given	General Adjustment Employment (42%)	1 year	93%	70%	Medical Rehab Ctr	Interview
Coonrad & Whitesides (1954)	100	not given	Medical/Vocational Status	4-9 years	100%	not given	Hospital	Not given

stated that their national sample of 222 SCI was selected "from lists obtained from several sources" and that the sample was "essentially self-selected". Remarkably, seven of the twenty studies didn't give response rates to their follow-up efforts. Sample size ranged from 25 (Steinberg, Birenbaum, & Stoddard, 1969) to 1,664 (Seybold, 1976). All but one study used either face-to-face interviews, mail questionnaires or combinations of mail questionnaires and interviews. Lack of standardized follow-up procedures introduces method variance which reduces the comparability of the studies, a common problem with follow-up studies in general. Of course, each study used different questionnaire formats and asked different questions depending on the focus of the study. Indeed, with few exceptions (e.g., Felice, Muthard, & Hamilton, 1976), it is impossible to determine the actual follow-up questions asked. Most of those SCI surveyed had been discharged either from an acute care medical hospital or from the Veterans Administration service system. Only two studies (Berns, Lowman, Rusk, & Covalt, 1957; Felice et al., 1976) specifically studied former SCI rehabilitation clients, although several studies (Dvanch, Kaplan, Grynbaum, & Rusk, 1965; Felton & Litman, 1965; Seybold, 1976) included subsamples of vocational rehabilitation clients. It was the exception rather than the rule for these studies to provide interrelationship of study variables at follow-up.

Adjustment at follow-up. Adjustment is such a broad construct that it is almost in the eye of the beholder. Adjustment does, however, presuppose some standard or at least point-of-view. Roessler and Bolton (1978) provided an overview of several models of adjustment common to rehabilitation including survival, disease amelioration, and positive striving. The conceptual approach of Strupp and Hadley (1977) regarding mental health is apropos to rehabilitation. Briefly, Hadley and Strupp (1977) pointed out that level of "adjustment" concerns value judgements made from three perspectives, society, professionals, and the individual. Adjustment from society's view-point entails judgements regarding conformity to societal norms and an emphasis on the predictability of behavior. From the professional's perspective, adjustment would be reflected in professional judgements tied to an often implicit theory or philosophy of human behavior. "Adjustment" from the perspective of the individual is highly idiosyncratic, subjective, and manifested in such things as sense of well-being, feelings of worth, and perceptions of adequacy.

Traditionally, success in vocational rehabilitation has been weighted in terms of return to a wage earning capacity and economic self-sufficiency.[1] Six studies

[1]Vocational Rehabilitation also defines adjustment, e.g., "26" closures, in terms other than competitive employment, such as rehabilitation to a homemaker role.

in Table 1 used employment as the primary criterion of adjustment. Overall, postservice employment rates ranged from 13% (Seybold, 1976) to 58% (Felton & Litman, 1965). Three studies (Dvanch et al., 1965; Felton & Litman, 1965; Seybold, 1976) clearly defined employment by such variables as occupational level, salary, and hours worked per week. El Ghatit and Hansen (1978) found that at follow-up 25% of their sample was employed, 25% had been employed post-service, but were unemployed at follow-up. These studies and the findings of Geisler, Jousse and Wynne-Jones (1966) and El Ghatit and Hansen (1979) suggested the following factors were related to employment among the spinal cord injured:

1) Age (younger)
2) Transportation (ability to drive an auto)
3) Level of injury (paraplegia better overall, quadriplegia better for professional and administrative jobs)
4) Time since injury (5 years post)
5) Education (higher)
6) Vocational training (training was related to employment, type of training was not related to type of employment obtained)

Four follow-up investigations dealt with specific kinds of adjustment. Runge (1966) assessed sustention of

self-care activities for a sample of SCI discharged from the Rancho Los Amigos Hospital, the first comprehensive rehabilitation center for civilian spinal cord injured. Overall, she found that persons in her sample did maintain self-care skills, and in some areas such as total dressing, writing and light household duties, increased their levels of functional independence. Crewe, Athelstan, and Krumberger (1979) studied adjustment correlates of marital status preinjury and postservice. They suggested marital status is an important correlate of adjustment and presented evidence that a married person who becomes spinal cord injured will exhibit less postinjury independence, whereas a person who marries postinjury is more likely to be employed and to be judged (by professionals) as better psychologically adjusted. Steinberg et al. (1968) and Deutsch and Goldston (1960) studied the postservice home adjustment of the spinal cord injured. Steinberg et al. (1968) sampled quadriplegics and found that although most retained self-care activities learned during rehabilitation, they relied on family members to perform activities of daily living. Deutsch and Goldston (1960) also followed up quadriplegics, many of whom required the use of a respirator. Their essentially qualitative report was based on what at that time were prevalent sexual stereotypes, e.g., young females were more likely to return

home because of dependency and passivity associated with the female role.

Finally, seven studies used an omnibus definition of adjustment in assessing success following rehabilitation services. While most rehabilitationists would agree with the importance of work as a primary construct of adjustment a growing number of experts are questioning the value of employment as the sole measure of adjustment. For example, Trieschmann (1974) considered rehabilitation to mean a person's ability to cope with a disability by knowing how to interact with a sometimes hostile environment. Her main thesis is that the process of rehabilitation should be individualized, and "adjustment" judged at the level of each individual's capabilities. Therefore, in defining adjustment, she suggests three criteria: "(a) prevention of medical complications and utilization of activities of daily living skills, (b) maintenance of a stable living environment and (c) productivity" (Trieschmann, 1974, p. 556). Productivity was broadly defined to include employment, avocational interests, performance of household duties, and education. Trieschmann (1974) implied that adjustment consists of several domains and can not be considered a unidimensional, bipolar concept. The following seven studies partitioned adjustment into different domains and described postservice functioning in terms of sample distributions on selected variables.

In an early investigation, Coonrad and Whitesides (1954) studied paraplegics injured between 1935 and 1950, by describing ten areas thought to present problems common to spinal cord injury, including: level of ambulation, functional independence, degree of bladder control, presense of decubitus ulcers, and vocational rehabilitation outcomes. Bern, et al. (1957) followed up 31 spinal cord injured vocational rehabilitation clients treated at a comprehensive medical rehabilitation center between 1950 and 1953. Besides vocational rehabilitation outcomes (13 SCI were employed and 10 were in vocational training programs at least one year postservice), Berns et al. (1957) reported on pretreatment demographic characteristics, types of rehabilitation services rendered, and such adjustment variables as functional limitations, incidence of hospitalization, and psychosocial status at follow-up. Deyoe (1972) and Fowlks (1966) described different samples of spinal cord injured persons at follow-up. Both studies reported postservice status in terms of marital status (Deyoe {1972} reported on pre to post injury change), avocational interest, postinjury education, and vocational status. Finally, three studies examined correlates of postservice adjustment. Frielich (1977) developed an ordered index of rehabilitation success. The index consisted of five levels from full time

work to not active. His study suggested that those SCI who at follow-up were married, had higher incomes, were more independent, and were injured at a younger age, were better adjusted. Perhaps more important were his findings of no significant relationships between preinjury occupation, age, living arrangements at follow-up, or family role, with adjustment at follow-up. Athelstan and Crewe (1979) had three expert judges review follow-up questionnaire data from a sample of spinal cord injured. Based on subjective ratings of each individual's psychosocial, vocational, and medical adjustment, the sample was partitioned into three adjustment categories. Athelstan and Crewe (1979) found that an important correlate of postservice adjustment was the manner of onset of disability. Imprudent, or high risk takers were better adjusted than were persons who suffered injury as innocent victims (cf Fordyce, 1964). Kemp and Vash (1971) had judges rate questionnaire data from a follow-up of spinal cord injured in terms of productivity. Productivity was said to cover four dimensions or activities: vocational, leisure, educational, and group membership. Kemp and Vash (1971) reported that the important correlates of adjustment defined as productivity were: more goals expressed, age (negative if goals are not considered, positive when they are), creativity, and less attention given to physical loss.

Purpose

Relatively little is known about the postservice adjustment status of spinal cord injured persons. Indices of adjustment have ranged from simple descriptions of status indicators to subjective ratings of experts. Besides simple categorical outcome measures (e.g., employed-not employed), no empirical measure of major adjustment domains has been developed. Studies relating perceptions toward rehabilitation services and future rehabilitation needs are rare. Therefore, the purpose of this investigation was four fold:

1. To describe a sample of former Arkansas Rehabilitation Service spinal cord injured clients three to four years postentry into an Innovative and Expansion service delivery project (see Cook, 1978; Cook & Roessler, 1977).
2. To describe changes in status from program entry to follow-up.
3. To develop an empirical index of adjustment to spinal cord injury at follow-up, and
4. To determine correlates of scale-defined adjustment at follow-up.

Methodology

Research Population

On July 1, 1975, the Arkansas Division of Rehabilitation Services initiated a Rehabilitation Services Administration sponsored Innovation and Expansion project to provide vocational rehabilitation services to spinal cord injured persons in Arkansas. One of the project objectives specified that all persons so served be monitored and that comprehensive research be conducted on project processes and outcomes. The research population consisted of 297 spinal cord injured rehabilitation clients served by the project from July 1, 1975 to June 30, 1978 (Cook, 1978; Cook & Roessler, 1977). Based on estimates of prevalence and incidence of spinal cord injury in Arkansas (Cook, 1978; Frasier, 1978; Wilcox, 1974), those 297 clients represent approximately one-half of the statewide SCI population, 1975 to 1978.

Measures

Statistical Reporting Form R-300. The R-300 provides a record for any client at any stage of the vocational rehabilitation process. The R-300 covers such process variables as case expenditures and services rendered as well as vocational outcome information. Because all persons in the research population were vocational rehabilitation referrals, at least some R-300 data were available for most clients.

Initial Questionnaire. A structured interview form was developed (Cook & Roessler, 1977) to supplement R-300 vocational related information. This form contained questions regarding client demographic, educational, and vocational information. Additional questions dealt with various social, community and medical factors specific to spinal cord injury. The questionnaire was completed by the vocational rehabilitation counselor at first contact with project clients. Questionnaires were completed for most (n=265) project clients.

Follow-up Questionnaire. Because this study specified a mail survey (see procedures section), questionnaire development followed well known principles (Dillman, 1978; Reagles, 1979) and was designed to facilitate respondent return, limit data processing errors, and efficiently assess client vocational, educational, and socio-economic status, satisfaction with previous services, and future needs. Some of the 27 items in the questionnaire (see Appendix A) were adapted or modified from several sources including various activities of daily living scales (Donaldson, Wagner, & Gresham 1973), and the Longitudinal Follow-up Survey (Gay, Reagles, & Wright, 1971). In addition, items were constructed to parallel certain items in the Initial Questionnaire and to parallel information obtained in previous follow-up studies on the

spinal cord injured, e.g., Fowlks, 1966; Hamilton, Muthard, & Turner, 1974; Kemp & Vash, 1971.

Follow-up Procedures

We attempted to follow-up the entire population of 297 spinal cord injured rehabilitation clients served by the Innovation and Expansion project 1975-1978. The procedures used to locate these persons closely followed procedures developed in a previous long-term follow-up of former rehabilitation clients (Bolton, Rowland, Brookings, Cook, Taperek, & Short, 1979). Specifically, we began by first trying to locate clients according to the following steps:

1) From the project research files obtain the client's last known forwarding address, phone number and address where client said he/she could always be contacted. Phone client. If unsuccessful,
2) search the telephone directory of the city of forwarding address for the person's listing; if unsuccessful,
3) call directory information in the city of forwarding address for client's listing; if unsuccessful,
4) search telephone directory of the city of forwarding address for persons with same surname, inquire as to whereabouts of client.

For those clients whom we were unable to locate through these procedures, two additional steps were taken:

1) Contact the vocational rehabilitation district office that served the client; if unsuccessful,
2) search the files of the Arkansas State Spinal Cord Commission.

An experienced phone interviewer contacted those clients located by the above procedures, explained the purpose of the follow-up survey, elicited client co-operation in completing the survey questionnaire, checked the client's address, and answered any questions regarding the survey.

The actual survey took the following form. Clients were alerted via telephone to expect the questionnaire. The questionnaire, a self-addressed, stamped envelope, and a carefully constructed cover letter (see Appendix A) were mailed within two days after contact. If the questionnaire was not returned after 10 days, a postcard reminder was sent. If after three weeks the questionnaire still had not been returned, another questionnaire, cover letter, and return envelope were sent. Finally, at the end of the survey all non-respondents were contacted by phone and asked to complete the questionnaire.

Follow-up Sample

We attempted to contact the entire research population

(N=297) 38 to 51 months after completion of the initial questionnaire. We found that 18 persons were deceased and that 25 had moved out-of-state. We were unable to locate, and unable to obtain any information on 68 former clients. Thus, the follow-up sample was defined as those remaining 186 persons. Ninety-five percent (176 persons) were contacted by phone. Of these, five, or 3%, refused to cooperate with the follow-up. A total of 181 questionnaires were mailed, 171 to those contacted by phone, and 10 to persons with no phone but with a current address. Six questionnaires were returned by the post office "addressee unknown", 31 persons failed to return the questionnaire, 144 persons completed and returned the questionnaire. For persons located, the response rate equaled 79%. Deleting deceased and out-of-state clients (n=43), 57% of the research population completed a follow-up questionnaire. Including deceased and out-of-state clients, 48% of the research population completed the questionnaire.

In order to assess the representativeness of the follow-up sample to the research population, thereby estimating the generalizability of the follow-up study, we compared the total population to the follow-up sample on 14 key demographic variables. Listed in Appendix B are comparisons of initial questionnaire data for the

total population and the follow-up sample. The distributions across variables for the population and sample were very similar, suggesting that the follow-up sample is reasonably representative of the research population. Considering the close correspondence between the population and sample on key socio-demographic variables, we believe that response bias is unlikely, and that any measureable differences between respondents and non-respondents are probably trivial. To summarize, we were able to locate, or account for 74% of those spinal cord injured vocational rehabilitation clients served between July 1, 1975 and June 30, 1978. Of those persons who actually received a questionnaire, 79% responded. Deleting deceased and out-of-state persons from the population, we obtained follow-up questionnaires for 57% of the research population.

Results: Life Status at Follow-up

SCI Clients at Project Entry

At referral to the project, the follow-up sample can be described as follows: 73% male, 80% Caucasian, 45% married, 36% single never married, 51% with no dependents, 30% with two or more dependents. Median age was 30, 47% were high school graduates. Prior to injury 35% lived with their spouse, 35% with parents, 10% alone. Prior to injury 55% supported themselves through wages or salaries, 40% received primary support from spouse or parents, only 2% received most of their income from public assistance. Total weekly income preinjury ranged from $10 to $550; median weekly income equaled $125. Of the 55% who worked preinjury, about half had worked three years or more on their most recent preinjury job, 20% had worked less than six months. Most recent preinjury weekly wages ranged from $20 to $550, median wage was $120. Preinjury, 35% listed outdoor activities as their favorite pastimes, 16% chose watching T.V. or listening to the radio, 8% listed visiting friends and hobbies as favorite leisure activities.

After injury and at referral, primary source of income was: 27% public assistance, 18% parents, 17% spouse, 15% wages or salaries, 4% SSDI. Weekly income after injury ranged from $20 to $550, median income equaled $100. Thirty percent reported that they had worked postinjury; most (78%) of these had engaged in competitive employment.

Age at injury ranged from birth to 59, with the median at age 22. By level of injury, 68% were paraplegics, 32% were quadriplegics. Automobile accidents were the major cause of injury (25%) followed by gunshot wounds (11%) and falls (11%). Urological involvement was the major complication of spinal cord injury (31% of the sample), 23% of the sample reported no major complications at the time of the interview.

SCI Clients at Follow-up[2]

We were able to obtain R-300 information on 127 of these spinal cord injured from Arkansas Vocational Rehabilitation agency files. As of August, 1980, 69 (54%) cases had been closed of which 33 (47%) were closed rehabilitated (status "26"), 22 (32%) were closed as ineligible for rehabilitation services (status "08"), 2 (4%) were unsuccessful closures after completion of the rehabilitation plan (status "30"), and 12 (7%) were unsuccessful closures after receiving rehabilitation services (status "28"). For those 33 persons successfully rehabilitated, 2 were closed in fiscal year 1976, 9 in 1977, 5 in 1978, 10 in 1979, and 6 in 1980. At follow-up, 14 of the "26" closures were competitively employed, 11 were

[2]At follow-up, clients were post acute, intermediate, and comprehensive rehabilitation center care, although some clients were still being served by Vocational Rehabilitation.

unpaid family workers or homemakers, and 2 were in school or receiving training. Of the 57 SCI whose cases remained open, 15 (26%) were in trial employment (status "22"), 10 (18%) were receiving vocational training (status "22"), 6 (11%) were in evaluation (status "06"), 5 (9%) had completed services and were awaiting placement (status "20"), 5 (7%) had service interruptions (status "24"). The remainder of open cases were in miscellaneous status categories, e.g., restoration, personal counseling, etc.

Satisfaction with rehabilitation services. When asked if they remembered being contacted by a counselor, 16% of the sample said that they did not. Asked what they thought of vocational rehabilitation services, 24% said they felt that they hadn't received any services, 45% said services were very helpful, 25% said services were somewhat helpful and only 6% said services were not helpful. Of those who remembered receiving rehabilitation services, 92% thought services were either very or somewhat helpful.

These clients appeared generally pleased with services received. However, we attempted to assess whether clients were more or less satisfied with certain services. Specifically, we asked which two of seven services were most helpful and which two were least helpful. Table 2 reports the percentage of persons responding and their ratings of seven rehabilitation services. As might be

Table 2

Percentage of Persons Rating Most
and Least Helpful Rehabilitation Services

Service	% of Sample (n=127) responding	Services were	
		Most Helpful	Least Helpful
1. School or vocational training	43%	64%	36%
2. Medical services	57%	81%	19%
3. Personal counseling	35%	34%	66%
4. Physical therapy	68%	83%	17%
5. Job Placement	41%	4%	96%
6. Purchase of tools or equipment	35%	60%	40%
7. Money for living expenses	35%	20%	80%

expected, medical and physical therapy, the two most likely services to be received by spinal cord injured clients, were also the most highly rated services. Both received overwhelming approval and were clearly perceived as the most valuable rehabilitation services. Employment related services (school or vocational training, and job placement) were the next more frequently rated (43% and 41%), but were differentially evaluated. Of those rating vocational training, 64% saw training as one of the most helpful services. Job placement was perceived as the least helpful service. Only about one-third of the sample rated personal counseling, purchase of tools and equipment, and money for living expenses, suggesting these services were not widely offered. Note that whereas vocational rehabilitation can only provide living expenses under certain conditions, project staff were encouraged to explore other financial resources on behalf of clients. Of these three services, the purchase of tools and equipment was rated more favorably, counseling and living expenses less favorably.

Vocational Economic Characteristics. Social Security Disability Insurance was by far the most prevalent source of income with 53% receiving primary support and 30% receiving some support from SSDI. Only 16% received most of their income from wages or salaries and only 19%

received most income from spouse or parents. For the remaining 12%, primary income came from either public assistance, veterans benefits, or workman's compensation. The median and modal weekly income was between $100-$150, 9% received over $350 a week, 28% received less than $100 a week.

Twenty-three percent reported that at follow-up they were working for wages, salaries, or were self-employed, 16% were homemakers or unpaid family workers, 11% were students. The 30 competitively employed SCI had median weekly wages of between $100-$150, 27% of these persons earned over $250 per week, 73% worked more than 31 hours per week. Most (71%) said they really liked their jobs, none said they disliked their work.

Of the 118 persons who said they were not currently working, only 20% were looking for a job. Nearly half of those not working felt they would have very little chance of getting the job they preferred, if it were available, 20% thought their chances were either very good or almost certain. Furthermore, 51% thought they would be unemployed one year later, but 27% thought they would be working, and 22% felt they would be in school or receiving vocational training. The most important perceived barriers to employment of unemployed SCI were disability and associated

medical problems (72%), lack of training, skill or work experience (11%), lack of jobs (5%), and transportation problems (5%). Of the 60 persons listing the next most important barrier to employment, 28% chose transportation problems, 22% lack of job opportunities, 12% lack of training, and 12% said available jobs didn't pay enough.

General Adjustment. Most spinal cord injured persons judged their mental health to be either excellent (27%) or good (35%), only 7% said their mental health was poor. On the other hand, these persons were evenly split between judging their physical health (aside from disability) as excellent or good (49%) and fair or poor (51%). Table 3 summarizes time spent in socio-educational activities and by implication relative ability to interact with the community. Inspection of Table 3 reveals that by far most persons (72%) spend the most time watching T.V. or listening to the radio. Other solitary activities (hobbies, reading) were engaged in at roughly the same rate as were more social activities, e.g., visiting friends, attending clubs and social meetings. Of interest is the finding that a majority of these spinal cord injured persons say they spend at least some time in outdoor activities.

Table 4 points out that with the exception of cooking and cleaning/laundry activities, a majority of these spinal cord injured appear to be independent (say they

Table 3

Percentage of Persons Spending Time (hours per week) in Socio-educational Activities

Activity	Amount		
	No participation	Moderate participation 1-6 hrs. per wk.	Most participation 7 or more hours per week
1. Outdoor (fishing, bird watching, etc.)	43%	44%	13%
2. Hobbies and crafts	56%	30%	14%
3. Watching TV, listening to radio	0%	28%	72%
4. Visiting friends	15%	52%	33%
5. Attending clubs, meetings, playing cards	57%	31%	12%
6. Reading books or magazines	14%	54%	32%
7. Attending school or course work	86%	2%	12%
8. Attending religious services or meetings	52%	47%	1%

need no help) in such basic Activities of Daily Living (ADL) as dressing, eating, and washing. On the other hand, with the exception of eating from a dish, about one-fifth of the sample were dependent (e.g., required much help) in one or more of those basic ADL's (see Table 4). Most of the sample, from 60% to 75%, needed some or much help in one or more areas requiring mobility, e.g., shopping, getting in and out of buildings.

These persons were also asked to list the most, and the next most important improvement in their lives during the past two years. Areas of major life improvements were diverse: 16% cited improved self-care, 15% stabilized medical conditions, 10% felt better about themselves, and 9% and 8% indicated changes in marital and financial status, respectively, and 20% said changes in home life, employment, family, and an increase in friends were their biggest improvements. The remaining 21% said they had made no major improvements and were essentially the same. Persons who cited the next biggest improvements made chose changes in self-care (19%), medical condition (16%), feelings about self (15%), and relationships with family (13%).

Future needs. These clients were also asked to choose the type of goals they thought were most important to accomplish in the future. Most (54%) chose independence (e.g., to be in better physical condition) as an important future goal; 31% chose psychologically related goals (to

Table 4

Percentage of Persons Needing Assistance in Mobility and Basic Activities of Daily Living (ADL)

Type of Activity	Perceived Help Needed		
	None	Some	Much
BASIC ADL			
1. Dressing	56%	23%	21%
2. Eating from dish	91%	6%	3%
3. Washing/bathing	60%	21%	19%
4. Bowel & bladder control	57%	19%	22%
5. Transferring to chair	68%	14%	18%
6. Transferring to bed	68%	14%	18%
7. Cooking	43%	20%	37%
8. Cleaning/ laundry	35%	24%	41%
MOBILITY			
9. Getting around town	40%	32%	28%
10. Negotiating stairs	24%	17%	58%
11. Getting in and out of buildings	31%	40%	29%
12. Shopping	30%	35%	35%

be less anxious, more decisive), only 15% chose social goals (to be more involved in social activities). Finally, persons in the sample were asked to choose from a list of nine services, those services each felt would be of personal future benefit. Table 5 presents those needs seen as most pressing by these spinal cord injured persons. One-third of the sample saw increased financial assistance as a primary need. About one-fifth viewed vocational assistance as a primary concern. The remaining persons were diverse in their choice of future needs. Particularly noteworthy is the finding that only 8% had pressing psychological needs (items 7, 8, and 9, Table 5).

Changes in Life Status, Preinjury to Follow-up

At referral into the spinal cord injury service project, we asked these clients questions regarding their life status at referral and prior to injury. At follow-up, we asked these same clients the same questions and we were able to determine individual change from preinjury to postservice follow-up on certain key variables. Those variables were: living arrangements, marital status, favorite avocational activity, source of income, and amount of weekly income preinjury.

As illustrated in Table 6, marital status and living arrangements were relatively stable with only 13% and 31% of the respective respondents indicating change.

Table 5

Percentage of Sample Estimating
Areas of Future Need

Needs	1st choice future need n=125	2nd choice future need n=99
1. Financial assistance	33%	18%
2. Improved transportation	6%	19%
3. Removal of architectural barriers	14%	12%
4. Help getting job	11%	13%
5. More medical attention	18%	13%
6. Educational or vocational training	10%	9%
7. Resolving emotional conflicts	5%	7%
8. Resolving family problems	2%	2%
9. Improving social life	1%	6%

Significantly, only 8% of those persons married at referral were divorced or separated some three years later. A substantial number (72%) changed their favorite avocational interest pre to postinjury. Over one-third of the sample changed from outdoor activities to television viewing as their favorite activity. Other changes in avocational interests were extremely heterogeneous.

Prior to injury, 57% of the sample listed wages or salaries as primary source of income. At follow-up, only 16% received most income from wages. Table 6 points out that 91% of the sample shifted source of income preinjury to follow-up. The most important source of income at follow-up was Social Security Disability Insurance (SSDI). Comparing weekly income preinjury to weekly income at follow-up, 49% of the sample increased income by $50 or more, 28% decreased income by $50 or more, and 23% were in the same income category. Comparing weekly income postinjury, at service entry, with income at follow-up, 54% of the sample increased income, 21% decreased income, and 25% stayed the same. Of course, because SSDI payments are tied to the consumer price index, persons receiving SSDI payments would be more likely to report higher incomes.

Characteristics by Sex, Impairment and Age

Previous research (see Introduction section) has

Table 6

Number and Percentage of SCI
Clients Indicating Life Status Changes

Variables	Number	Percentage
Living arrangements (n=124)		
1. Relatives to spouse	7	18%
2. Parents to alone	6	16%
3. Parents to spouse	5	13%
4. Spouse to parents	3	8%
5. Alone to spouse	3	8%
6. Attendant care	4	11%
Total Changes	38	31%
Marital Status (n=128)		
1. Single to married	9	53%
2. Separated to divorced	3	18%
3. Married to divorced	3	18%
4. Married to separated	2	11%
Total Changes	17	13%
Favorite avocational activity (n=97)		
1. Outdoor to TV	35	36%
2. Hobbies to TV	8	8%
3. Reading to TV	6	6%
4. Outdoor to visiting friends	6	6%
Total Changes	70	72%
Primary Source of Income (n=108)		
1. Wages to SSDI	42	39%
2. Parents to SSDI	18	17%
3. Parents to Wages	9	8%
4. Wages to Spouse	8	7%
5. Spouse to SSDI	4	4%
Total Changes	98	91%

suggested that rehabilitation outcomes might differ according to sex, severity of impairment, or age. This sample of spinal cord injured was partitioned by sex, level of injury (paraplegics, quadriplegics) and age (three categories: ages 19-29, ages 30-39, and ages 40-65). Status at follow-up was contrasted by sex, age, and level of injury. The results are presented in Table 7 and are summarized below.

Sex. Proportionately, males and females were similar in terms of marital status, age, time spent in solitary avocational activities, general emotional adjustment, future goals, optimism toward the future, type of living arrangements, severity of impairment, age distribution, and total weekly income.

Significant differences included:

1. Males needed more assistance in performing activities of daily living ($\chi^2=5.87$, $p\leq.05$)
2. Females spent more time in social activities ($\chi^2=13.2$, $p<.01$)
3. Males downgraded their general physical health ($\chi^2=12.14$, $p<.01$)
4. Females were more likely to receive most of their income from employment or from their spouse. Males were more likely to receive most of their income from Social Security ($\chi^2=50.85$, $p<.001$)

Table 7

Status at Follow-up by Sex, Severity of Impairment and Age

Status	Sex		Severity of Impairment		Age		
	Females (n=37)	Males (n=100)	Paraplegics (n=90)	Quadriplegics (n=40)	19-29 (n=46)	30-39 (n=42)	40-65 (n=47)
1. Marital Status							
Single	30%	39%	33%	40%	63%	31%	13%
Married	51%	43%	54%	28%	26%	45%	66%
Divorced/separated	19%	18%	13%	32%	11%	24%	21%
2. Living arrangements							
Alone	14%	11%	13%	5%	11%	14%	11%
Spouse	64%	44%	58%	33%	35%	50%	64%
Parents	17%	30%	22%	33%	39%	26%	13%
Relatives/Friends	2%	8%	4%	12%	6%	5%	8%
Attendant	3%	3%	0%	10%	4%	2%	2%
Other	0%	4%	3%	7%	5%	3%	2%
3. Age							
19-29	38%	32%	29%	43%	100%	0%	0%
30-39	30%	31%	33%	25%	0%	100%	0%
40-65	32%	37%	38%	32%	0%	0%	100%
4. Disability							
Quadriplegic	24%	35%	0%	100%	40%	25%	28%
Paraplegic	76%	65%	100%	0%	60%	75%	72%
5. Sex							
Male	0%	100%	71%	83%	70%	74%	75%
Female	100%	0%	29%	17%	30%	26%	25%
ADL help needed in: Dressing, Eating, Washing, Bladder control, and transferring to chair or bed							
None	76%	54%	64%	43%	69%	73%	56%
Some	13%	17%	14%	22%	14%	10%	24%
Much	11%	19%	22%	35%	17%	17%	20%

Table 7 (cont.)

Status at Follow-up by Sex, Severity of Impairment and Age

Status	Sex		Severity of Impairment		Age		
	Females (n=37)	Males (n=100)	Paraplegics (n=90)	Quadriplegics (n=40)	19-29 (n=46)	30-39 (n=42)	40-65 (n=47)
ADL Help needed in: stairs, transportation, access to buildings, cooking, cleaning, shopping							
none	42%	35%	36%	26%	41%	37%	25%
some	34%	26%	29%	27%	29%	29%	36%
much	25%	29%	25%	47%	48%	34%	39%
Hours spent per week in solitary activity: hobbies, TV or radio, reading							
3 or less	44%	46%	49%	47%	47%	45%	52%
4 to 9	35%	21%	25%	27%	30%	21%	24%
10 or more	21%	33%	26%	26%	23%	34%	24%
Hours spent per week in: outdoor activities, visiting friends, social or religious meetings, school							
3 or less	57%	80%	65%	50%	65%	74%	89%
4 to 9	16%	14%	12%	1 [illegible]	18%	21%	8%
10 or more	22%	6%	23%	33%	17%	5%	3%
General physical health							
excellent	22%	21%	20%	23%	37%	15%	10%
good	45%	24%	29%	32%	46%	34%	12%
fair	25%	39%	37%	32%	15%	39%	50%
poor	8%	16%	14%	13%	2%	12%	38%
General Emotional Adjustment							
excellent	33%	39%	34%	43%	48%	34%	29%
good	42%	33%	37%	33%	39%	37%	29%
fair	19%	20%	20%	20%	11%	22%	29%
poor	6%	8%	9%	6%	2%	7%	13%

Table 7 (cont.)

Status at Follow-up by Sex, Severity of Impairment and Age

Status	Sex		Severity of Impairment		Age		
	Females (n=37)	Males (n=100)	Paraplegics (n=90)	Quadriplegics (n=40)	19-29 (n=46)	30-39 (n=42)	40-65 (n=47)
Most important future goal:							
social	15%	15%	13%	22%	7%	22%	17%
psychological	33%	28%	31%	25%	20%	33%	36%
independence	52%	57%	56%	53%	73%	45%	47%
Primary source of income:							
self	24%	16%	17%	18%	18%	26%	13%
spouse	38%	6%	18%	5%	9%	12%	24%
parents	8%	3%	2%	8%	11%	2%	0%
Social Security Welfare, Workmen's Compensation, and other	0%	12%	8%	11%	6%	10%	10%
Total weekly income:							
$1 - $100	23%	28%	25%	29%	30%	20%	27%
$101 - $200	31%	32%	30%	34%	27%	30%	39%
$201 - $300	17%	24%	24%	17%	22%	18%	28%
$301 or more	29%	16%	20%	20%	21%	32%	6%
Employment							
Working for wages or self employed	30%	19%	24%	20%	16%	34%	17%
Homemaker	43%	2%	19%	6%	16%	13%	14%
Unpaid family worker	11%	2%	2%	0%	2%	0%	2%
Student	11%	12%	8%	14%	25%	8%	0%
Unemployed	11%	47%	31%	51%	39%	37%	33%
other	4%	18%	16%	9%	2%	8%	33%
Person looking for work							
Yes	26%	20%	20%	22%	33%	23%	8%
No	74%	80%	80%	78%	67%	77%	92%

Table 7 (cont.)

Status at Follow-up by Sex, Severity of Impairment and Age

Status	Sex		Severity of Impairment		Age		
	Females (n=37)	Males (n=100)	Paraplegics (n=90)	Quadriplegics (n=40)	19-29 (n=46)	30-39 (n=42)	40-65 (n=47)
Estimated chance of getting job perferred:							
Very good	29%	15%	15%	20%	26%	17%	12%
50-50	29%	15%	17%	23%	21%	34%	3%
Not so good	42%	60%	68%	56%	53%	49%	85%
Expectation for future							
Employed	33%	26%	34%	14%	36%	29%	19%
Training or school	33%	21%	16%	38%	39%	26%	10%
Unemployed	33%	53%	50%	48%	25%	45%	71%
Satisfaction with services:							
Very helpful	40%	73%	59%	60%	58%	52%	64%
Somewhat helpful	50%	27%	34%	30%	35%	35%	33%
Not helpful	10%	0%	7%	10%	7%	13%	3%

5. Females were more likely to specify some vocational activity (e.g., employed, homemaker, etc.) Males were more likely to say they were unemployed (χ^2=52,08, p<.001)
6. Females were more optimistic that they could get the job they preferred if it were available (χ^2=11.59, p<.01), and were generally more optimistic toward employment (χ^2=8.14, p<.02)
7. Proportionally, more males rated rehabilitation services as being "very helpful" (χ^2=26.50, p<.001)

Severity of impairment. Besides obvious expected differences (χ^2=8.86, p<.02) in ability to perform activities of daily living, there were few outstanding differences between paraplegics and quadriplegics. Paraplegics were more likely to be married (χ^2=16.94, p<.001) and were more optimistic toward future employment (χ^2=17.34, p<.001). On the other hand, paraplegics and quadriplegics were similar on age, sex, time spent in leisure activities, perceived general physical and mental health, type of future job, source of income, amount of income, vocational activity, and satisfaction with rehabilitation services.

Age. The clearest intrasample differences appeared when demographic/adjustment variables were contrasted by age. However, many of the differences summarized below probably parallel those found in the able-bodied population.

1. Nearly two-thirds (63%) of the youngest (ages 19-29) spinal cord injured were single. Two-thirds of the oldest (40-65) SCI were married ($\chi^2=58.45$, $p<.001$).
2. There were significantly more quadriplegics in the youngest group ($\chi^2=5.89$, $p<.05$).
3. All age groups spent the same proportionate time in solitary activities. Younger persons spent proportionately more time in active avocational interests ($\chi^2=23.54$, $p<.001$).
4. There was a clear trend for older persons to rate their physical health as fair or poor ($\chi^2=95.77$, $p<.001$). Persons in the youngest age group rated their emotional adjustment as excellent or good (87%), persons in the oldest age group were more likely to rate their emtional adjustment as fair or poor (42%) ($\chi^2=23.08$, $p<.001$).
5. The youngest SCI were most likely to choose independence as their most important future goal (73%). Older SCI (ages 30-65) were as likely to choose psychosocial goals as they were independence goals ($\chi^2=21.35$, $p<.001$).
6. Source of income was roughly the same for all age groups except that more persons in the

youngest group cited parents as their primary source, and slightly more persons in the middle group (ages 30-39) cited themselves as the primary source. Persons 30-39 years old were more likely to have highest weekly incomes ($\chi^2=24.04$, $p<.001$).

7. The largest proportion of students was found in the youngest group, the largest proportion of persons working for wages was in the middle age group, only 8% of persons in the oldest group were looking for work ($\chi^2=18.85$, $p<.001$).
8. Most (85%) of the oldest SCI who were not working did not think they could get the job they wanted and most (71%) thought they would still be unemployed in a year.

Summary

1. The follow-up sample consisted of 144 SCI clients referred for VR services in Arkansas between 1975 and 1978, with these characteristics: 73% male, 68% paraplegics, median age of 30 years, 45% married, 47% high school graduates, and 55% self-supporting prior to injury.
2. At follow-up in Spring, 1980, 53% of the SCI clients were receiving primary financial support from SSDI

and another 30% were receiving some support. Only 16% were receiving most of their income from wages or salaries. Financial assistance was the most frequently cited future need.

3. Nearly one-half of the vocational rehabilitation case closures were successful rehabilitations. Only 17% of the cases were closed as ineligible for services. At follow-up, 14 (42%) of those successful rehabilitants were competitively employed. An additional 15 SCI were also employed. Overall, only one-half of the sample were engaged in some gainful activity (i.e., employment, homemaking, unpaid family worker, or schooling) at follow-up.
4. These SCI were generally pleased with rehabilitation services. They rated the following services as <u>most helpful</u>.

    Physical therapy (83%)
    Medical services (81%)
    School or vocational training (64%)
    Purchase of tools or equipment (60%)
    Personal counseling (34%)
    Living expenses (20%)
    Job placement (4%)

5. Most of the competitively employed SCI clients were very satisfied with their jobs, none were dissatisfied.

6. Of those SCI clients not currently working, only 20% were looking for a job. Almost one-half (47%) of those not working felt they would have very little chance of getting a preferred job if it were available. The largest perceived barrier to employment by unemployed SCI clients was the disability and its associated medical problems (72%).
7. Most SCI clients judged their overall mental health to be either excellent (37%) or good (35%); one-half (49%) rated their physical health (aside from disability) as excellent or good, with the others describing their physical health as fair or poor.
8. One-half (54%) of SCI clients selected independence goals as their most important future goals, one-third (31%) chose psychologically related goals, while only 15% identified social goals as most important. However, relative to other future needs, psychosocial needs such as resolving emotional conflicts were infrequently cited.
9. The most popular recreational/educational activities engaged in by SCI clients were:

    Watching TV and listening to radio (100%)

    Reading books or magazines (86%)

    Visiting with friends (85%)

Moderately popular activities were:

Attending religious services (48%)

Hobbies and crafts (44%)

Social gatherings (43%)

10. About two-thirds of SCI clients were essentially independent in performing basic ADL tasks, e.g., dresssing, eating, bathing, and transferring, while one-third were independent with respect to mobility activities.

11. Changes in the life status of SCI clients from pre-injury to follow-up were as follows:

Primary source of income (91%)

Primary avocational activity (72%)

Living arrangements (31%)

Marital status (13%)

12. Comparisons between males and females, paraplegics and quadriplegics, and younger and older SCI clients revealed several differences. One consistent finding across comparisons was that males, quadriplegics, and older clients were all less optimistic about their employment prospects. Other findings were that females appeared better adjusted, (e.g., were more independent in activities of daily living, socially active and likely to engage in gainful activities);

there were relatively few "adjustment" differences between paraplegics and quadriplegics, and older SCI were the least well adjusted.

Results: Indexing Adjustment to Spinal Cord Injury

Previous follow-up studies of spinal cord injured have either defined adjustment in unidimensional terms, such as employment, or have used categorical information to describe the postservice status of spinal cord injured persons. Three studies (Athelstan & Crewe, 1979; Frielich, 1977; Kemp & Vash, 1971) used experts' subjective ratings of spinal cord injured protocols to rank-order persons on a postservice "adjustment" continuum. Lacking is research on defining "adjustment" in an empirical, multidimensional sense. Consequently, a major purpose of this investigation was to develop an empirical measure which would tap those domains reasonably thought to reflect adjustment. Such a criterion could then permit analysis of those person, service, and environmental variables thought to impact on level of adjustment.

Development procedures. To develop an adjustment index, we chose questionnaire items (see questions 3, 7, 20, and 21, Appendix A) reflecting the major domains of adjustment to spinal cord injury; participation in avocational and vocational activities, ability to perform activities of daily living, and self-perceived general physical and emotional health. All item responses were,

of course, from the perspective of the individual. A principal component, varimax rotation procedure, was used to analyze the eight leisure activity items (see question 3, Appendix A) and the twelve activities of daily living items (see question 4, Appendix A). Table 8 illustrates first principal component and the three factor varimax solution for the eight, time spent in leisure activity items. Factor I appears to be a general factor. The three items loading highest on that factor, outdoor activities (.74), visiting friends (.67), and hobbies and crafts (.61) were used to form one scale labeled Avocational-leisure activities. Attending school (.81), reading (.73), and social activities (.65) loaded highest on Factor II and were combined to form another scale designated Avocational-intellectual pursuits. Factor III is bipolar with loadings on time spent in religious activities (+.78) and time spent watching television (-.69). While those items might relate to some underlying dimension of adjustment, neither seemed to reflect adjustment per se. Neither item was considered for the index, although both were retained as possible moderator variables.

Table 9 presents the first principal component and varimax rotations for the 12 activities of daily living items. Those items loading highest on Factor I; getting

Table 8

Factor Structure of Leisure Activity Items (n=136)

	Variables	First Principal Component	Varimax Rotated Principal Components[1] I	II	III
1.	Outdoor activities	.59	.74	.05	-.01
2.	Hobbies and crafts	.48	.61	.02	.32
3.	TV viewing	.35	.44	.05	-.69
4.	Visiting friends	.70	.68	.30	-.14
5.	Social activities	.74	.42	.65	.02
6.	Reading	.47	.01	.73	-.09
7.	School	.67	.08	.81	.06
8.	Religion	.27	.31	.03	.78
	Proportion Variance	.30	.39	.36	.25

[1]Eigen values for eight principal components: 2.42, 1.26, 1.13, 0.87, 0.70, 0.59, 0.51, 0.50.

in and out of public buildings (.90), transferring to chair (.83), dressing (.80), eating (.78), washing (.78) and bowel and bladder control (.65), suggest activities necessary for minimal self-care. These seven items were used to form the scale Basic activities of daily living. The four items loading highest on Factor II: getting around town (.91), going up and down stairs (.91), transferring to bed (.71), and cooking (.69) suggest that Factor II taps a dimension of activities necessary for independent living. Those four items formed the scale Independence activities of daily living. Factor III has two high loading items, cleaning and doing the laundry (.87), and shopping (.80). Factor III may mirror sex role differences or possibly activities with which these spinal cord injured expect assistance. Those items formed a two item scale called Shopping-cleaning.

Partly because a relatively small proportion of these spinal cord injured were employed at follow-up, we decided to give "credit" for a variety of vocational related activities. Therefore, the vocational dimension in the adjustment index took the form of a dichotomous variable whereby persons who said they were employed, or were students, homemakers, or unpaid family workers, received a score of 1, persons who said they were unemployed received a score of 0. Finally, perceived general physical

Table 9

Factor Structure of Activities of Daily Living Items (n=135)

	Variables	First unrotated Principal Component	Varimax rotated Principal Components[1] I	II	III
1.	Dressing	.87	.80	.23	.40
2.	Eating	.60	.78	.22	-.14
3.	Washing	.88	.78	.30	.37
4.	Bowel & bladder	.82	.65	.26	.47
5.	Transfer to chair	.83	.83	.16	.35
6.	Get around town	.71	.24	.91	.11
7.	Negotiate stairs	.71	.24	.91	.11
8.	Transfer to bed	.61	.12	.71	.31
9.	Public buildings	.85	.90	.17	.27
10.	Cooking	.70	.25	.69	.33
11.	Laundry	.74	.29	.23	.87
12.	Shopping	.77	.27	.37	.80
	Proportion variance	.58	.43	.33	.24

[1]Eigen values for twelve principal components: 7.00, 1.66, 0.99, 0.68, 0.56, 0.28, 0.26, 0.20, 0.16, 0.10, 0.07, 0.00.

health (excluding disability) and perceived mental health were assessed by responses to questions 20 and 21 (see Appendix A).

To summarize, adjustment at follow-up of these spinal cord injured rehabilitation clients was assessed via eight variables thought to represent major adjustment domains. Those adjustment scales and scoring procedures are located in Appendix C. The scales are:

1. Avocational-intellectual
2. Avocational-leisure
3. Basic ADL
4. Independent ADL
5. Shopping-cleaning ADL
6. Vocational activity
7. General physical health
8. General mental health

Raw scores on the above adjustment variables were placed in a common metric by conversion to standardized T scores. Mean T scores (e.g., 50) were substituted for missing values. There were five or less missing scores per scale. Each person's overall adjustment score was determined by computing the average of the eight adjustment variables. Table 10 lists the means and standard deviations for the eight adjustment subscales and the overall adjustment scale.

Table 10

Distribution Discriptors Adjustment Scale Scores

Scale	Mean (N=140)	S.D.	Skewness	Kurtosis	Range
1. Overall Adjustment	49.99	6.02	-0.21	2.28	35.2-62.7
2. Avocational-intellectual	50.33	9.87	1.40	4.38	39.9-76.8
3. Avocational-leisure	49.78	9.91	0.74	3.37	37.0-81.3
4. Basic ADL	49.80	9.87	-0.76	2.21	26.8-59.7
5. Independence ADL	49.78	9.82	-0.14	1.91	33.3-64.3
6. Shopping/ Cleaning ADL	49.94	9.81	0.12	1.64	37.4-63.7
7. Vocational Activity	49.88	10.01	-0.17	1.01	39.2-59.2
8. General Physical Adjustment	50.24	9.79	0.00	1.99	34.1-64.6
9. General Emotional Adjustment	50.16	9.98	-0.59	2.37	28.4-60.5

Table 11 illustrates the intercorrelation of the eight subscales and the overall adjustment scale. Scales concerned with physical limitations (variables 4, 5, 6 and 8, Table 11) correlated highest (r's .68 to .78) with the overall adjustment scale. With the exception of the three activities of daily living scales (numbers 4, 5, and 6) which were highly correlated (r's .61 to .86) other subscales were relatively independent, suggesting those subscales were measuring unique components of adjustment. For example, avocational-intellectual scores correlated moderately (r=.42) but significantly (P<.001) with avocational-leisure scores. Although the relationship between the two avocational scales was highly significant, only 18% of the variance in one scale is predictable from the variance in the other. Correlations of avocational-leisure scores with other scale scores were modest. Similarly, general mental health is relatively independent of all other adjustment subscales (r's of .05 to .18) except for ratings of general physical health (.56) and that correlation may be partly due to the format and position of the two questions in the follow-up questionnaire. Of interest is the lack of relationship (r=.05) between vocational activity and general mental health which supports previous research (Roessler & Bolton, 1978) suggesting vocational and

Table 11

Intercorrelations Adjustment Scale Scores
(N=140)

Variables	1	2	3	4	5	6	7	8	9
1. Overall adjustment	1.00	.42	.60	.68	.78	.70	.50	.71	.48
2. Avocational-intellectual		1.00	.42	.02	.05	.00	.22	.30	.09
3. Avocational-leisure			1.00	.27	.31	.23	.14	.38	.17
4. Basic ADL				1.00	.86	.61	.20	.26	.12
5. Independence ADL					1.00	.76	.28	.35	.18
6. Shopping-cleaning ADL						1.00	.27	.36	.17
7. Vocational activity							1.00	.27	.05
8. General physical								1.00	.56
9. General emotional									1.00

r .18=p≤.05

psychological adaptation are independent dimensions of adjustment. Finally, factor analysis was used to summarize the intercorrelation matrix of the eight adjustment subscales. Table 12 points out that the eight subscales consisted of four underlying dimensions, activities of daily living (loadings of .91, .93, and .83, Factor I, Table 12), avocational activities (loadings of .84 and .81, Factor II), perception toward general physical and emotional health (loadings of .74 and .94, Factor III) and vocational activity (loading of .94, Factor IV). The largest proportion of variance (39%) is accounted for by Factor I which in turn is loaded highest on activities of daily living items. The remaining 61% of the variance is distributed across three other dimensions of adjustment suggesting that each dimension makes a unique contribution to the measurement of overall adapation to spinal cord injury. Because of the obvious experimental nature of these measures of adjustment, the eight subscales were not combined into factor defined scales. Rather, and in order to isolate possible fine differences in adjustment, all of the eight subscales were used in subsequent analyses.

Correlates of Adjustment to Spinal Cord Injury

The ultimate worth of empirical scales of adjustment is established through their theoretical value in better

Table 12

Factor Structure of Eight Adjustment Scales (n=140)

	Adjustment Scales	First Unrotated Principal Component	Varimax Rotated Principal Components[1] I	II	III	IV
1.	Avocational-intellectual	.31	-.11	.84	.06	.29
2.	Avocational-leisure	.55	.29	.81	.17	.16
3.	Basic ADL	.78	.91	.07	.06	.02
4.	Independence ADL	.87	.93	.11	.14	.12
5.	Shop/Cook ADL	.79	.83	.03	.16	.18
6.	Vocational activity	.47	.21	.09	.09	.94
7.	General Physical	.72	.30	.32	.74	.20
8.	General Emotional	.45	.06	.01	.94	-.02
	Proportion variance	.42	.39	.22	.23	.16

[1]Eigen values for eight principal components: 3.32, 1.47, 1.03, 0.89, 0.47, 0.39, 0.31, 0.11.

understanding the process of adjustment and in their practical usefulness as a criterion mirroring the effect of services and/or the need for further services. It is apparent that in order to be of theoretical or practical merit, the adjustment scales developed in this study should relate to previously established adjustment related variations reported in the literature. Establishing construct validity enables investigators to place faith in isolating and studying heretofore undocumented concomitants of adjustment. Therefore, adjustment scale scores were partitioned by invariant trait variables (sex, severity of disability, and age) and by more value laden idiographic variables such as type of future life goals and most important future needs. Tables 13 through 20 report, via t-tests and analysis of variance, mean adjustment score comparisons[3] for subgroups of spinal cord injured formed by twelve potential moderator variables. There were no significant differences on any mean adjustment scale score for time spent in religious activities vs. time spent watching television, marital status, amount of weekly income or attendance/non-attendance at a comprehensive rehabilitation center. Significant adjustment scale scores by subgroup categories are summarized in Appendix D.

[3]Experimentwise error rate for each set of independent variables, with eight subscales as dependent variables, is α at .01=.08; α at .001=.01.

Sex, Disability and Age. Table 13 presents t score comparisons between males and females, and between paraplegics and quadriplegics on overall adjustment and eight adjustment component scale scores. Table 14 lists ANOVA comparisons on the same nine scales for age groups 19-29, 30-39, and 40-65. Females had significantly higher overall adjustment scores and were significantly higher on all three ADL scales and were more vocationally active. Males had lower scores on all scales. As expected, and in support of scale validity, quadriplegics were significantly lower on the three ADL scales. There were no significant mean differences between quadriplegics and paraplegics on overall adjustment, time spent in avocational interests, vocational activity, or self ratings of general physical or emotional health. Table 14 points out that age was related to adjustment. Younger persons (ages 19-29) had significantly higher overall adjustment scores, spent significantly more time in avocational pursuits, needed less assistance in independence ADL's and had higher self ratings of their physical and emotional health, than did older persons (ages 40-65). Persons in the middle group (ages 30-39) varied in comparison to the other two age groups. They were like younger persons in overall adjustment scores, time spent in intellectual avocational activities, and in help needed to perform cleaning and shopping activities; however, they were like older persons in

Table 13

t-Test Comparisons of Mean Adjustment Scale Scores
by Sex, Disability and Goals

Adjustment Scales	Sex							Disability							Goals						
	Male (n=98)		Female (n=33)					Paraplegics (n=90)		Quadriplegics (n=41)					Psychoso (n=53)		Independent (n=65)				
	$\bar{X}$	SD	$\bar{X}$	SD	t	df	p	$\bar{X}$	SD	$\bar{X}$	SD	t	df	p	$\bar{X}$	SD	$\bar{X}$	SD	t	df	p
						129							129							116	
1. Overall adjustment	48.8	5.7	52.4	6.0	3.06		.002	50.2	5.8	48.6	6.2	NS			48.9	6.2	50.		NS		
Component Scales																					
2. Avocational-intellectual	49.0	8.4	50.1	9.6	NS			48.4	7.2	51.9	11.1				49.5	8.2	49.				
3. Avocational-leisure	48.6	9.4	51.5	8.7	NS			49.3	9.9	49.2	8.1	NS			49.4	8.8	50.	9.9	NS		
4. Basic ADL	48.5	10.3	52.8	8.0	2.22		.03	52.2	8.4	43.7	10.7	4.91		.00	50.0	10.3	49.2	9.6	NS		
5. Independence ADL	48.3	9.7	52.6	9.4	2.26		.03	50.9	9.2	46.0	10.2	2.73		.01	49.5	9.5	49.2	10.0	NS		
6. Shopping/cleaning ADL	48.8	10.0	53.1	8.4	2.21		.03	51.1	9.9	47.3	8.8	2.09		.04	48.3	9.4	50.3	10.2	NS		
7. Vocational activity	48.1	9.9	54.9	8.6	3.47		.001	50.6	10.0	48.4	10.0	NS			50.5	10.4	49.1	9.5	NS		
8. General phyiscal	49.4	10.0	52.4	8.9	NS			49.9	9.9	50.9	9.8	NS			47.7	9.5	52.4	9.3	2.57		.01
9. General emotional	49.9	10.3	50.1	9.5	NS			49.4	10.2	51.1	9.6	NS			45.7	10.1	53.1	9.1	4.15		.001

Table 14
Analysis of Variance of Mean Adjustment
Scale Scores by Age

Adjustment Scales	Age Group A 19-29 Mean Scores (n=43)	B 30-39 Mean Scores (n=39)	C 40-65 Mean Scores (n=47)	F@2/126df	p	Multiple Comparisons[1]
1. Overall Adjustment	54.47	50.40	46.60	13.84	.001	C<A & B
Component scales						
2. Avocational-intellectual	51.47	52.16	45.75	7.92	.001	C<A & B
3. Avocational-leisure	53.65	47.78	46.66	7.73	.001	B & C<A
4. Basic ADL	50.69	51.14	47.24	2.08	N.S.	N.S.
5. Independence ADL	51.04	50.89	46.59	3.16	.05	B & C<A
6. Shopping/cleaning ADL	51.91	51.71	46.41	4.85	.01	C<A & B
7. Vocational activity	50.96	51.65	47.51	1.93	N.S.	N.S.
8. General physical	56.08	49.63	45.05	18.18	.001	C<B<A
9. General emotional	53.26	49.05	47.04	4.56	.01	C<A

[1] Duncan's Multiple Range Test $df = 126$, $\alpha = .05$

time spent in leisure avocational activities and help needed in independence ADL's. There were no significant age differences on vocational activities, or in help needed to perform basic ADL's.

Future goals and needs. Table 13 compares adjustment scores by persons who chose psychosocial vs. independence related future goals and Table 15 lists score comparisons by persons who chose as their most important future needs either: environmental modifications such as removal of architectural barriers, jobs or vocational training, financial assistance, or medical attention. Supporting the construct validity of the scales was the fact that persons who chose psychosocial goals had significantly lower ratings of their general physical and emotional health compared to independence goal choosers. There were no significant differences on any of the other adjustment scales.

Comparisons of adjustment scores by expressed future needs resulted in complex findings. Generally, persons who cited medical attention as a pressing future need had the lowest adjustment scores, persons who cited financial assistance had the next lowest adjustment scores, and persons who cited either jobs or environmental modifications had the highest adjustment scores. Interestingly, persons who cited a job or job training as their most important need spent significantly more time in leisure activities than persons who cited other needs.

Table 15

Analysis of Variance of Mean Adjustment Scale Scores by Most Important Future Needs

Adjustment Scales	Groups by Most Pressing Need Expressed								F @ 3/104df	p	Multiple Comparisons[1]
	A	Modified Environment	B	Job or Training	C	Financial Assistance	D	Medical Attention			
	Mean Scores (n=23)		Mean Scores (n=26)		Mean Scores (n=39)		Mean Scores (n=20)				
1. Overall Adjustment	52.28		52.71		48.19		46.34		6.67	.001	C & D<A & B
Component scales											
2. Avocational-intellectual	51.96		51.84		49.06		46.96		1.33	N.S.	N.S.
3. Avocational-leisure	49.65		53.77		47.78		43.31		2.52	.06	A, C & D<B
4. Basic ADL	51.92		51.61		47.57		47.14		1.83	N.S.	N.S.
5. Independence ADL	50.78		52.84		47.49		45.75		2.80	.04	C & D<B
6. Shopping/cleaning ADL	51.89		54.53		48.31		46.30		4.51	.005	C & D<B; D<A & C
7. Vocational activity	55.82		48.87		49.89		45.62		4.24	.008	C, B & D<A
8. General physical	53.89		54.33		48.37		43.22		7.00	.001	C & D<A & B; D<C
9. General emotional	53.56		52.31		48.75		46.11		2.68	.05	D<A & B

[1] Duncan's Multiple Range Test df = 104, α = .05

Source of income, biggest improvement made. Table 16 presents ANOVA comparisons of adjustment scores by primary source of income; from employment, Social Security Disability Insurance (SSDI), or from miscellaneous sources, e.g., spouse, parents, welfare, etc. Table 17 lists ANOVA comparisons across groups of persons who cited their biggest improvement made in the past one or two years; namely, improvement in employment, family functioning, medical well being, social functioning, or those persons who said they had made no improvements.

With the exception of expected low vocational activity scores, persons who were SSDI recipients appeared similar to persons who received primary income from miscellaneous sources. There were no significant differences between source of income groups in estimated time spent in avocational activities. In self ratings of general emotional health, employed persons and SSDI recipients were not significantly different, however, both groups were significantly higher than persons receiving primary income from miscellaneous sources. Generally, persons who received most income from employment had higher adjustment scale scores.

Mean score adjustment scale comparisons between groups citing different kinds of postservice life improvements resulted in expected findings. Of the five scales, including the overall adjustment scale, with significant mean score differences between groups, persons who said they had made

Table 16
Analysis of Variance of Mean Adjustment Scale
Scores by Primary Source of Income

Adjustment Scales	Groups by Source of Income			F@2/137df	p	Multiple Comparisons[1]
	A Employment	B Miscellaneous	C SSDI			
	Mean Scores (n=21)	Mean Scores (n=46)	Mean Scores (n=73)			
1. Overall Adjustment	54.69	49.77	48.77	8.84	.001	B & C<A
Component scales						
2. Avocational-intellectual	51.09	51.39	49.45	0.62	N.S.	N.S.
3. Avocational-leisure	49.23	50.68	49.38	0.28	N.S.	N.S.
4. Basic ADL	54.85	50.73	47.77	4.74	.01	C<A
5. Independence ADL	56.36	50.33	47.55	7.26	.001	B & C<A
6. Shopping/cleaning ADL	56.79	49.23	48.42	6.63	.001	B & C<A
7. Vocational activity	62.76	49.45	45.89	35.58	.001	C<B<A
8. General physical	57.12	47.93	49.94	7.14	.001	B & C<A
9. General emotional	54.88	46.98	50.80	5.11	.007	B<C & A

[1] Duncan's Multiple Range Test df = 137, α = .05

Table 17

Analysis of Variance of Mean Adjustment Scale
Scores by Area of Biggest Life Improvement Past Two Years

Adjustment Scales	Groups by Area of Improvement					F @ 4/120df	p	Multiple Comparisons[1]
	A Employment	B Family	C Medical	D Social	E No Improvement			
	Mean Scores (n=13)	Mean Scores (n=22)	Mean Scores (n=42)	Mean Scores (n=21)	Mean Scores (n=27)			
1. Overall Adjustment	50.98	51.09	51.25	50.14	46.64	2.89	.02	E<A, B, C&D
Component scales								
2. Avocational-intellectual	48.09	54.14	48.78	48.96	48.78	1.46	N.S.	N.S.
3. Avocational-leisure	46.11	52.17	51.00	50.92	48.38	1.05	N.S.	N.S.
4. Basic ADL	50.92	48.21	53.25	47.73	46.99	2.98	.02	N.S.
5. Independence ADL	54.30	49.03	53.05	48.37	45.17	3.98	.005	E<A & C
6. Shopping/ Cleaning ADL	53.28	49.53	50.56	51.02	47.71	0.85	N.S.	N.S.
7. Vocational activity	58.82	49.45	49.99	50.55	45.76	4.09	.004	B,C,D,E<A
8. General physical	48.89	52.03	52.65	51.44	44.60	3.33	.01	E<B,C, & D
9. General emotional	49.03	53.73	49.85	51.37	45.89	2.16	.08	E<B

[1] Duncan's Multiple Range Test df = 120, α = .05

no major improvements scored lowest. Persons who said becoming employed was their bigg[illegible]rovement had the highest vocational activity sco[illegible]ients citing improvements in family relationsh[illegible]gnificantly higher ratings of general emotional health. [illegible] groups were similar in time spent in avocational interests, [illegible]asic ADL, and help needed in cleaning and shopping activ[illegible]ies.

Motivation for employment. Adj[illegible]ment scale scores were analyzed for the 104 SCI who were unemployed at follow-up by reasons for not working and by optimism toward future employment. Table 18 presents ANOVA adjustment score comparisons by reason for not working. There were no significant differences between groups on the basic ADL or vocational activity scales. Persons who gave disability or medical problems as reasons for not working scored lowest on the other seven adjustment scales. In rating their general emotional health, clients who cited lack of training or lack of jobs were similar to persons citing disability problems. Both groups were significantly lower on perceived emotional health compared to those SCI who cited transportation problems, low pay, or no need to work. Table 19 illustrates t-test comparisons of adjustment scores by unemployed clients who said they were actively seeking or not seeking work. Table 19 also presents adjustment score comparisons between those optimistic toward future employment versus persons who were pessimistic. Spinal cord injured clients who were

Table 18

Analysis of Variance of Mean Adjustment Scale Scores
by Reasons for Not Working

Adjustment Scales	Groups by Reasons Given			F@2/100df	p	Multiple Comparisons[1]
	A Lack of Training/ Lack of jobs	B Transportation, Low Pay, No Need to Work	C Disability/ Medical Problems			
	Mean Scores (n=17)	Mean Scores (n=11)	Mean Scores (n=76)			
1. Overall Adjustment	53.56	54.47	47.22	15.23	.0001	C<A & B
Component scales						
2. Avocational-intellectual	55.04	53.77	48.15	4.44	.01	C<A
3. Avocational-leisure	55.60	54.70	48.31	4.44	.01	C<A
4. Basic ADL	52.59	52.80	47.97	2.38	N.S.	N.S.
5. Independence ADL	53.32	53.74	47.01	4.90	.01	C<A & B
6. Shopping/ cleaning ADL	54.59	54.35	46.33	8.75	.001	C<A & B
7. Vocational activity	49.63	47.55	45.25	2.19	N.S.	N.S.
8. General physical	53.14	59.84	45.96	14.94	.0001	C<A & B
9. General emotional	51.10	58.58	47.46	6.76	.001	A & C<B

[1] Duncan's Multiple Range Test df = 101, α = .05

Table 19

t-Test Comparisons of Mean Adjustment Scale Scores
by Work Motivation Variables

Adjustment Scales	Unemployed persons seeking/not seeking work							Employment Status in one year							Estimated Chance of Preferred Employment						
	Seekers (n=23)		Non-seekers (n=90)					Employed (n=52)		Unemployed (n=53)					Some (n=52)		None (n=48)				
	$\bar{X}$	SD	$\bar{X}$	SD	t	df	p	$\bar{X}$	SD	$\bar{X}$	SD	t	df	p	$\bar{X}$	SD	$\bar{X}$	SD	t	df	p
1. Overall adjustment	51.2	4.8	48.7	6.3	3.19	111	.001	53.7	4.9	45.9	5.3	7.76	103	.001	52.7	5.2	47.0	5.6	5.29	98	.001
Component Scales																					
2. Avocational-intellectual	53.8	11.3	49.5	10.0	NS			54.2	11.3	46.9	7.7	3.86	90	.001	54.4	11.9	47.3	7.6	3.56	87.6	.001
3. Avocational-leisure	53.9	11.7	49.4	10.0	NS			54.6	9.9	47.0	10.4	3.88		.001	53.1	10.3	48.5	11.0	2.16		.03
4. Basic ADL	51.7	6.7	48.8	10.4	2.74	52.1	.01	52.7	8.7	46.7	10.3	3.27		.001	51.1	9.3	48.3	10.2	NS		
5. Independence ADL	54.3	7.9	48.2	9.9	2.71		.01	53.6	6.8	45.6	9.4	4.51		.001	52.4	8.9	46.9	9.6	2.93		.004
6. Shopping/cleaning ADL	53.3	9.1	48.4	9.8	2.17		.03	54.0	9.4	45.3	8.4	5.01		.001	53.0	9.3	46.1	9.1	3.76		.001
7. Vocational activity	48.2	9.3	47.8	8.8	NS			51.8	9.0	43.2	4.5	5.79	71.1	.001	50.1	9.3	45.5	7.2	2.66		.01
8. General phyiscal	55.2	10.5	48.2	9.2	3.19		.001	54.7	9.2	44.6	7.7	6.14		.001	54.1	9.1	45.7	8.1	4.90		.001
9. General emotional	52.2	11.1	48.6	9.9	NS			52.8	9.8	46.4	10.2	2.91		.004	52.7	8.2	46.1	10.4	3.55		.001

seeking employment were significantly higher on overall adjustment, on all three ADL scales, and on self-ratings of general physical health. Clients who were optimistic, that is, thought they would be employed at least half-time or be in training in a year had, compared to more pessimistic persons, significantly higher adjustment scores across all nine scales. Persons who thought they had at least some chance of obtaining the job they preferred, if it were available, had significantly higher adjustment scale scores on eight of the nine scales. Clearly, a more optimistic attitude was related to adjustment for those spinal cord injured.

Vocational rehabilitation outcomes. Table 20 illustrates mean adjustment scale comparisons by type of rehabilitation outcome, closed rehabilitated, ineligible for services, or not rehabilitated after services. A total of 57 cases remained active at follow-up. There were no significant differences between groups on help needed in basic activities of daily living, perceived general emotional adjustment or time spent in avocational activities. Clients closed ineligible for services had significantly lower scores on the other six adjustment scales. Clients closed rehabilitated generally had the highest adjustment scores. Persons in the open case category were not significantly different from clients who were rehabilitated.

Table 20
Analysis of Variance of Mean Adjustment Scale
Scores by Vocational Rehabilitation Closure Status

tment les	Closure Groups A Status "26" Rehabilitated	B Open cases	C Status 08 Ineligible For Services	D Status "28"or"30" Not Rehabilitated Received some Services	F @ 3/122df	p	Multiple Comparisons[1]
	Mean Scores (n=33)	Mean Scores (n=57)	Mean Scores (n=22)	Mean Scores (n=14)			
erall justment	52.54	50.99	47.89	45.69	6.21	.001	C & D<A & B
nent scales							
vocational-ntellectual	51.09	51.52	48.48	48.85	0.65	N.S.	N.S.
vocational-eisure	50.82	51.84	45.80	48.89	2.14	N.S.	C<B
asic ADL	52.35	50.52	46.28	46.57	2.11	N.S.	N.S.
ndependence DL	52.39	51.05	43.99	47.44	3.15	.03	C<A
hopping/ leaning ADL	52.12	52.00	42.90	48.43	4.16	.001	C<A & B
ocational ctivity	56.74	50.04	40.59	47.35	12.26	.001	C<B & D<A
eneral hysical	53.06	50.97	45.00	50.27	2.27	.08	C<A
eneral notional	51.72	49.97	48.00	49.00	0.46	N.S.	N.S.

an's Multiple Range Test df = 122, α = .05

Predicting Adjustment at Follow-up

A final analysis was conducted. The initial questionnaire completed by these clients at entry into the spinal cord injured project was inspected for variables which might relate to adjustment scale scores at follow-up. Six predictors were chosen. They were: sex, age, education (high school graduates), marital status (married), primary preinjury income from employment, and level of spinal cord injury (paraplegia or quadriplegia). Inspection of Table 21 reveals that there were 28 significant correlations between the predictors and the nine adjustment scales. Relationships were generally in the expected directions, that is, younger persons, females, more education, and paraplegia were indicative of higher adjustment scores. An unexpected finding was that preinjury employment was negatively correlated with adjustment scores at follow-up. Table 22 presents the same six predictors simultaneously weighted and related to each of the nine adjustment scales. As illustrated by Table 22, two variables, primary income from employment preinjury and marriage added very little to the predictability of adjustment scores at follow-up. The best predictors by order of importance were age (younger), sex (female), disability (paraplegia) and not being a high school graduate. Age was the most important variable in predicting scores on six of the nine scales. For example, age accounted for

Table 21

Intercorrelations of Predictor Variables at Project Entry with Adjustment Scales at Follow-up[1]

Predictors	Adjustment Scales: Avoc.-Intellectual	Avoc.-Leisure	Basic ADL	Indep. ADL	Shopping/Cleaning ADL	Voc. Activity	General Physical	General Mental	Overall Adjustment
1. Sex (males=0)	.09	.13	.19*	.20*	.19*	.32*	.13	.01	.26*
2. Age (19-29=1; 30-39=2; 40-65=3)	-.33*	-.35*	-.17*	-.23*	-.30*	-.12	-.43*	-.26*	-.44*
3. High school graduate (no=0)	.22*	.09	.01	.02	.02	-.06	.26*	.19*	.15
4. Married (no=0)	-.18*	-.04	.02	-.09	-.14	-.09	-.14	-.12	-.17*
5. Primary preinjury income-employment (no=0)	-.18*	-.20*	-.13	-.15	-.14	-.19*	-.24*	-.17*	-.28*
6. Disability (Paraplegia=1; Quadriplegia=2)	.19*	.00	-.40*	-.23*	-.18*	-.07	.05	.08	-.13

[1] N=131

*r=.17, $p \leq .05$

Table 22

Multiple Stepwise Regression, Six Predictor Variables to Nine Adjustment Scales (N=130)

Scales	Most Important Predictors	R	R^2	All Predictors		
				R	R^2	Increase R^2
Overall Adjustment	1. Age 2. Sex 3. High School	.56	.31	.57	.33	.02
Avocational-intellectual	1. Age 2. High School 3. Disability	.42	.18	.45	.20	.02
Avocational-leisure	1. Age 2. Sex	.39	.15	.42	.18	.03
Basic ADL	1. Disability 2. Age 3. Sex	.48	.23	.48	.23	.00
Independence ADL	1. Disability 2. Age 3. Sex	.39	.15	.40	.16	.01
Shopping/ Cleaning ADL	1. Age 2. Sex 3. Disability	.42	.18	.43	.19	.01
Vocational Activity	1. Sex 2. Age	.35	.13	.37	.14	.01
General Physical	1. Age 2. High School 3. Sex	.53	.28	.54	.29	.01
General Emotional	1. Age 2. High School	.53	.28	.54	.29	.01

65% of the predictable variance in the overall adjustment scale. A substantial amount of variance in each scale remained unassociated with the six demographic predictors.

Summary

1. Using standard psychometric procedures, it was possible to construct a continuous empirical index of adjustment to spinal cord injury, through which index scores approximated a normal distribution.
2. Analysis of item scores revealed that the index measured four adjustment domains: ability to perform activities of daily living, time spent in avocational activities, participation in vocational activities, and perception of physical and mental health.
3. Persons with higher overall adjustment scores were more likely to be female, younger, choose jobs and removal of environmental barriers as their most pressing future needs, cite lack of training or transportation as a reason for unemployment, and remain optimistic toward future employment.
4. Persons with lower overall adjustment scores were more likely to be male, older, choose financial aid and medical care as their most pressing need, receive most income from social security, cite disability as the reason for not working, and remain pessimistic toward future employment.

5. Level of impairment and type of personal goals were not related to overall adjustment scores.
6. Persons who had been closed as rehabilitated or who remained as active cases had significantly higher overall adjustment scores compared to those SCI who had been closed as ineligible for rehabilitation services or as non-rehabilitants.
7. Three variables; age (younger), sex (female), and less than a high school education, had a multiple correlation of .56 with overall adjustment scores.

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SURVEY QUESTIONNAIRE

1. What is your marital status? (check one box)

☐ 1. Single	☐ 4. Divorced
☐ 2. Married	☐ 5. Widowed
☐ 3. Separated	☐ 6. Other _____

2. Does anyone live with you? (check one box)

☐ 1. Live alone	☐ 5. Friends
☐ 2. Husband/wife and/or children	☐ 6. Hired attendant
☐ 3. Parent or parents	☐ 7. Other
☐ 4. Other relatives	

3. Approximately how much time per week do you spend in the following activities? (circle the appropriate number for each activity)

	Hours per week					
1. Outdoor activities such as fishing, hunting, bird watching, etc.	none	1-3	4-6	7-9	10-12	13+
2. Hobbies and crafts, for example, coin collecting, sewing, model building, etc.	none	1-3	4-6	7-9	10-12	13+
3. Watching T.V., listening to the radio	none	1-3	4-6	7-9	10-12	13+
4. Visiting friends	none	1-3	4-6	7-9	10-12	13+
5. Attending social activities such as playing cards, clubs, meetings, etc.	none	1-3	4-6	7-9	10-12	13+
6. Reading books, magazines, or newspapers	none	1-3	4-6	7-9	10-12	13+
7. Attending school or taking courses	none	1-3	4-6	7-9	10-12	13+
8. Attending religious services or meetings	none	1-3	4-6	7-9	10-12	13+

4. How much help do you need in the following activities? (circle the appropriate word for each activity)

		Help needed		
1.	Dressing	a lot	some	none
2.	Eating from a dish	a lot	some	none
3.	Washing and bathing	a lot	some	none
4.	Bowel and bladder control	a lot	some	none
5.	Transferring to chair	a lot	some	none
6.	Getting around town	a lot	some	none
7.	Going up and down stairs	a lot	some	none
8.	Transferring to and from bed	a lot	some	none
9.	Getting in and out of public buildings	a lot	some	none
10.	Cooking	a lot	some	none
11.	Cleaning and doing the laundry	a lot	some	none
12.	Shopping	a lot	some	none

5. What is the source of your income? (put the appropriate number in each box)

☐ Most income comes from this source

☐ Some income comes from this source

1. Self (wages, salary, etc.)
2. Savings, investments
3. Spouse
4. Parents
5. Public assistance (e.g., welfare, food stamps)
6. Social Security
7. Veterans Benefits
8. Workman's Compensation

6. What is your approximate weekly family income from all sources? (check one box)

☐ 1. None to $50
☐ 2. $50 to $100
☐ 3. $100 to $150
☐ 4. $150 to $200
☐ 5. $200 to $250
☐ 6. $250 to $300
☐ 7. $300 to $350
☐ 8. Over $350

7. Please check the box that best describes your current situation.

☐ 1. Working for wages, salary or commission
☐ 2. Working in a workshop
☐ 3. Self employed
☐ 4. Unpaid family worker
☐ 5. Homemaker
☐ 6. Student
☐ 7. Unemployed
☐ 8. Other _____

IF YOU ARE WORKING, PLEASE ANSWER QUESTIONS 8 TO 11, NEXT PAGE

IF YOU ARE NOT WORKING, PLEASE GO TO QUESTION 12

IF YOU ARE WORKING PLEASE COMPLETE THIS PAGE

8. What is the title of your job? _____

9. How may hours a week do you work? (check one box)

- ☐ 1. 1 to 10 hours
- ☐ 2. 11 to 20 hours
- ☐ 3. 21 to 30 hours
- ☐ 4. 31 to 40 hours
- ☐ 5. more than 40 hours

10. What is your weekly pay before deductions? (check one box)

- ☐ 1. $10 to $50
- ☐ 2. $50 to $100
- ☐ 3. $100 to $150
- ☐ 4. $150 to $200
- ☐ 5. $200 to $250
- ☐ 6. $250 to $300
- ☐ 7. $300 to $350
- ☐ 8. over $350

11. How do you like your job? (check one box)

- ☐ 1. I don't like it
- ☐ 2. It's O.K.
- ☐ 3. I really like it

GO TO QUESTION 16

18. In general, what do you think of vocational rehabilitation services? (check one box)

- ☐ 1. Can't say, didn't receive any services
- ☐ 2. Services were very helpful
- ☐ 3. Services were somewhat helpful
- ☐ 4. Services were not helpful

19. After your initial hospitalization, which of the vocational rehabilitation services you may have received did you find most helpful, which did you find least helpful? (check no more than two boxes in each column)

Most helpful	Least helpful		
☐	☐	1.	School or vocational training
☐	☐	2.	Medical services
☐	☐	3.	Personal counseling
☐	☐	4.	Physical therapy
☐	☐	5.	Job placement
☐	☐	6.	Purchase of equipment or tools
☐	☐	7.	Money for living expenses

20. How is your general physical health? Aside from your disability, how would you describe your physical health? (check one box)

- ☐ 1. Excellent
- ☐ 2. Good
- ☐ 3. Fair
- ☐ 4. Poor

21. How is your general mental health or emotional adjustment? (check one box)

- ☐ 1. Excellent
- ☐ 2. Good
- ☐ 3. Fair
- ☐ 4. Poor

26. All things considered, how are you getting along?

27. What can you tell us about how we might improve vocational rehabilitation services to persons like yourself?

THANK YOU

346 N. West Avenue
Fayetteville, Arkansas 72701
(501) 575-3656

UNIVERSITY OF ARKANSAS · Arkansas Rehabilitation Research and Training Center

In order to improve vocational rehabilitation services we are contacting persons like yourself who are spinal cord injured. As you may know, recent federal legislation has singled out spinal cord injury as a high priority service group. Basically, we want to find out how you are getting along and if there are things you might tell us which will help us improve vocational rehabilitation services. Frankly, the only way we know to find out is to ask you.

We would appreciate it if you would complete the enclosed questionnaire and mail it back to us. There is an accompanying self-addressed, stamped envelope for your convenience. Please be assured that your answers are kept strictly confidential. We hope you will answer the questions as honestly as possible.

Because we can contact relatively few people, it is extremely important that you complete the enclosed questionnaire. It should only take about 10-15 minutes. Thank you for your assistance.

Sincerely,

Paul Taperek
Project Coordinator

PT/lh
Enclosures

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Appendix B

Comparisons Between Project Population and Follow-up Sample

	Project Population n=263	Follow-up Sample n=132
1. Sex		
Male	76%	73%
Female	24%	27%
2. Race		
Caucasian	83%	80%
Non-Caucasian	17%	20%
3. Age		
15-35	66%	63%
35-67	34%	37%
Mdn	29 years	30 years
4. Marital Status		
Married	42%	45%
Single	35%	36%
Widowed, divorced or separated	13%	19%
5. Dependents		
None	51%	51%
One	17%	19%
Two or more	32%	30%
6. Living with:		
Spouse	34%	35%
Parents	36%	35%
Alone	12%	10%
Other	18%	20%
7. Education		
High School graduate	42%	47%
Mdn years	10	11
8. Primary source of income prior to injury:		
Wages	57%	55%
Parents	25%	28%
Spouse	10%	12%
Other	8%	5%

Appendix B
(continued)

	Project Population n=263	Follow-up Sample n=132
9. Amount of weekly income:		
$10 - $75	12%	12%
$76 - $125	43%	39%
$126 - $200	25%	31%
$201 - $280	1?%	9%
$281 - $550	10%	9%
10. Primary source of income after injury:		
Wages	12%	14%
Parents	23%	18%
Spouse	16%	16%
Welfare/SSDI	30%	31%
Other	19%	21%
11. Weekly income after injury:		
$10 - $75	41%	39%
$76 - $125	32%	27%
$126 - $200	17%	24%
$201 - $280	8%	7%
$281 - $550	2%	3%
12. Severity of injury:		
Paraplegia	65%	68%
Quadriplegia	35%	32%
13. Age at injury:		
Average	26	26
Mdn	22	22
14. Cause of injury:		
Auto accident	29%	25%
Gunshot	13%	11%
Fall	12%	11%
Disease	10%	11%
Other causes	36%	42%

Appendix C

Adjustment Scales and Scoring Procedures

A. Avocational-Intellectual (Question 3, items 5,6, & 7)

		Hours per week					
		none	1-3	4-6	7-9	10-12	13+
5.	Attending social activities	1	2	3	4	5	6
6.	Reading books, magazines	1	2	3	4	5	6
7.	Attending school	1	2	3	4	5	6

Score = Σ items 5, 6, & 7/3

B. Avocational-Leisure (Question 3, items 1, 2, & 4)

		Hours per week					
		none	1-3	4-6	7-9	10-12	13+
1.	Outdoor activities	1	2	3	4	5	6
2.	Hobbies and crafts	1	2	3	4	5	6
4.	Visiting friends	1	2	3	4	5	6

Score = Σ items 1, 2, & 4/3

C. Basic ADL (Question 4, items 1, 2, 3, 4, 5, & 9)

		Help needed		
		a lot	some	none
1.	Dressing	1	2	3
2.	Eating from dish	1	2	3
3.	Washing and bathing	1	2	3
4.	Bowel and bladder control	1	2	3
5.	Transferring to chair	1	2	3
9.	Getting in and out of public buildings	1	2	3

Score = Σ 1, 2, 3, 4, 5, & 9/6

D. Independence ADL (Question 4, items 6, 7, 8, & 10)

		Help needed		
		a lot	some	none
6.	Getting around town	1	2	3
7.	Going up and down stairs	1	2	3
8.	Transferring to bed	1	2	3
10.	Cooking	1	2	3

Scoring = Σ 6, 7, 8, & 10/4

E. Cleaning/Shopping (Question 4, items 11 & 12)

	Help needed		
	a lot	some	none
11. Cleaning and doing laundry	1	2	3
12. Shopping	1	2	3

Score = Σ 11 & 12/2

F. Vocational activity (Question 7)

Items 1 through 7 (employed, family worker, homemaker, or student) score = 1
Item 7 (unemployed) = 0

G. General Physical Health (Question 20)

Response	Score
1. Excellent	4
2. Good	3
3. Fair	2
4. Poor	1

H. General Mental Health (Question 21)

Response	Score
1. Excellent	4
2. Good	3
3. Fair	2
4. Poor	1

Overall Adjustment Score

Sum scores for each person on Scales A through H, divide by 8.

Appendix D

Summary of Statistically Significant Adjustment Scale Score Differences

Overall Adjustment Scale

1. Sex: Females higher; males lower
2. Age: Ages 19-39 higher; ages 40-65 lower
3. Disability: N.S.
4. Personal goals: N.S.
5. Future needs: Environmental modification and jobs higher; Financial and Medical lower
6. Source of Income: Employment higher; Miscellaneous and SSDI lower
7. Life Improvement: Any improvement higher; No improvement lower
8. Reason not working: Lack of training, jobs, transportation or low pay higher; Disability lower.
9. Unemployed, job seeking: Job seekers higher; non-job seekers lower
10. Unemployed, future status: Employment higher; unemployment lower
11. Unemployed, probability of job: Assured higher, despondents lower
12. Vocational rehabilitation outcomes: Rehabilitated and open cases higher; Ineligibles and non-rehabilitants lower

Avocational-intellectual Scale

1. Sex: No difference
2. Age: Ages 19-39 higher; ages 40-65 lower
3. Disability: N.S.
4. Personal goals: N.S.
5. Future needs: N.S.
6. Source of Income: N.S.
7. Life improvement: N.S.
8. Reason not working: Lack of training or jobs higher; Disability lower
9. Unemployed, job seeking: N.S.
10. Unemployed, future status: Employment higher; unemployment lower
11. Unemployed, probability of job: Assured higher; despondents lower
12. Vocational rehabilitation outcome: N.S.

Avocational-leisure Scale

1. Sex: N.S.
2. Age: Ages 19-29 higher; Ages 30-65 lower
3. Disability: N.S.
4. Personal goals: N.S.
5. Future needs: Jobs higher; Medical, financial, and modified environment lower
6. Source of income: N.S.
7. Life improvement: N.S.
8. Reason not working: Lack of training or jobs higher; Disability lower

9. Unemployed, job seeking: N.S.
10. Unemployed, future status: Employment higher; unemployment lower
11. Unemployed, probability of job: Assured higher, despondents lower
12. Vocational rehabilitation outcome: Open cases higher; ineligibles lower

Basic Activities of Daily Living Scale

1. Sex: Females higher; males lower
2. Age: N.S.
3. Disability: Paraplegics higher; Quadriplegics lower
4. Personal goals: N.S.
5. Future needs: N.S.
6. Source of income: Employment higher; SSDI lower
7. Life improvement: N.S.
8. Reason not working: N.S.
9. Unemployed, job seeking: Job seekers higher; non-seekers lower
10. Unemployed, future status: Employment higher; unemployment lower
11. Unemployed, probability of job: N. S.
12. Vocational rehabilitation outcome: N.S.

Independence Activities of Daily Living Scale

1. Sex: Females higher; males lower
2. Age: Ages 19-29 higher; ages 30-65 lower
3. Disability: Paraplegics higher; Quadriplegics lower
4. Personal goals: N.S.

5. Future needs: Jobs higher; Financial assistance or medical attention lower
6. Source of income: Employment higher; SSDI and miscellaneous lower
7. Life improvement: Employment and medical higher; No improvement lower
8. Reason not working: Lack of training, jobs or transportation, low pay higher; disability lower
9. Unemployed, job seeking: Job seekers higher, non-seekers lower
10. Unemployed, future needs: Employment higher; unemployment lower
11. Unemployed, probability of job: Assured higher, despondents lower
12. Vocational rehabilitation outcome: Rehabilitants higher; Non-rehabilitants lower

Shopping/Cleaning Activities of Daily Living Scale

1. Sex: Females higher, males lower
2. Age: Ages 19-29 higher; 30-65 lower
3. Disability: Paraplegics higher, quadriplegics lower
4. Personal goals: N.S.
5. Future needs: Jobs higher than financial or medical; modified environment and financial higher than medical
6. Source of income: Employment higher; miscellaneous and SSDI lower
7. Life improvement: N.S.

8. Reason not working: Lack of training and transportation or low pay higher; disability lower
9. Unemployed, job seeking: Job seekers higher; unemployed lower
10. Unemployed, future status: Employed higher; unemployed lower
11. Unemployed, probability of job: Assured higher, despondents lower
12. Vocational rehabilitation outcome: Rehabilitants higher; ineligibles lower

Vocational Activity Scale

1. Sex: Females higher; males lower
2. Age: N.S.
3. Disability: N.S.
4. Personal goals: N.S.
5. Future needs: Modified environment higher; job, financial assistance and medical, lower
6. Source of income: Employment higher than miscellaneous; employment and miscellaneous higher than SSDI
7 Life improvement: Employment higher; family, medical social and no improvement lower
8. Reason not working: N.S.
9. Unemployed, job seeking: N.S.
10. Unemployed, future status: Employment higher; unemployment lower
11. Unemployed, probability of job: Assured higher, despondents lower

12. Vocational rehabilitation outcome: Rehabilitants higher than open cases and non-rehabilitants higher than ineligibles

General Physical Health Scale

1. Sex: N.S.
2. Age: Ages 19-29 higher than ages 30-39; ages 30-39 higher than ages 40-65
3. Disability: N.S.
4. Personal goals: Independence goal setters higher; psychosocial goal setters lower
5. Future needs: Modified environment and jobs higher than financial and medical; financial higher than medical
6. Source of income: Employment higher; miscellaneous and SSDI lower
7. Life improvement: Family, medical, and social higher; no improvement lower
8. Reason not working: Lack of training, transportation, and low pay higher; disability lower
9. Unemployed, job seeking: Job seekers higher; non-seekers lower
10. Unemployed, future status: Employed higher; unemployed lower
11. Unemployed, probability of job: Assured higher, despondents lower
12. Vocational rehabilitation outcome: Rehabilitants higher; ineligibles lower

General Emotional Health Scale

1. Sex: N.S.
2. Age: Ages 19-29 higher; Ages 40-65 lower
3. Disability: N.S.
4. Personal goals: Independence goal setters higher; psychosocial goal setters lower
5. Future needs: Modified environment and job higher; medical lower
6. Source of income: Employment and SSDI higher; miscellaneous lower
7. Life improvement: Family higher; no improvement lower
8. Reason not working: Transportation, low pay higher; lack of training/jobs and disability lower
9. Unemployed, job seeking: N.S.
10. Unemployed, future status: Employment higher; unemployed lower
11. Unemployed, probability of job: Assured higher; despondents lower
12. Vocational rehabilitation outcome: N.S.